A HISTORY OF THE EARTH, AND ANIMATED NATURE.

By OLIVER GOLDSMITH.

ILLUSTRATED WITH COPPER PLATES.

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WITH CORRECTIONS AND ADDITIONS,

BY W. TURTON, M.D.

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CONTENTS

OF THE THIRD VOLUME.

Chap.		Page.
I.	Of Animals of the Dog Kind	1
	The Wolf	30
	The Fox	44
	The Jackall	56
	The Isatis	61
	The Hyæna	62
II.	Of Animals of the Weasel Kind	68
	The Ermine, or Stoat	76
	The Ferret	80
	The Polecat	83
	The Martin	87
	The Sable	91
	The Ichneumon	94
	The Stinkards	98
	The Genette	102
	The Civet	104
	The Glutton	109
III.	Of animals of the Hare Kind	116
	The Rabbit	127
	The Squirrel	136
	The Flying Squirrel	14[illegible]
	The Marmot	146
	The Agouti	155
	The Paca	158
	The Guinea Pig	161
IV.	Of Animals of the Rat Kind	167
	The Mouse	173
	The Dormouse	177
	The Musk Rat	179
	The Cricetus	181
	The Leming	184
	The Mole	189

V.	Of Animals of the Hedge-hog, or prickly Kind	197
	The Tanrec and Tendrac	202
	The Porcupine	204
VI.	Of Quadrupeds covered with Scales or Shells, instead of Hair	212
	The Armadillo, or Tatou	218
VII.	Of Animals of the Bat Kind	225
VIII.	Of Amphibious Quadrupeds	235
	The Beaver	243
	The Seal	255
	The Morse	266
	The Manati	268
	The Platypus	271
IX.	Of Animals of the Monkey Kind	275
	The Baboon	293
	The Monkey	299
	The Maki	317
	The Opossum, and its Kinds	322
	The Kanguroo	330
X.	Of the Elephant	332
XI.	Of the Rhinoceros	357
XII.	The Hippopotamus	362
XIII.	The Camelopard	367
XIV.	The Camel and Dromedary	371
XV.	The Lama	379
XVI.	The Nyl-ghau	383
XVII.	The Bear	385
XVIII.	The Badger	391
XIX.	The Tapir	393
XX.	The Racoon	394
XXI.	The Coatimondi	396
XXII.	Of the Ant-Bear	397
XXIII.	Of the Sloth	402
XXIV.	The Jerboa	406

A HISTORY OF ANIMALS.

CHAP. I.

*Animals of the Dog Kind **.

THE second class of carnivorous quadrupeds may be denominated those of the dog kind. This class is neither so numerous nor so powerful as the former, and yet neither so treacherous, rapacious, or cowardly. This class may be principally distinguished by their claws, which have no sheath, like those of the cat kind, but still continue at the point of each toe, without a capability of being stretched forward, or drawn back. The nose also, as well as the jaw, of all the dog kind, is longer than in the cat; the body is, in proportion, more strongly made, and covered with hair instead of fur. There are many internal distinctions also; as in the intestines, which are much longer in the dog kind than in

[* These animals have six cutting teeth in the upper jaw, those at the sides being longer, and the intermediate ones lobed: in the under jaw there are also six, those at the sides being lobed; there are four canine teeth, one on each side in each jaw, which are incurved. The grinders are six or seven. They are all carnivorous, very swift and active, and well fitted for the chace: none of them are able to climb trees, because they want the collar bone.

those of the cat; the eye is not formed for night vision; and the olfactory nerves are diffused, in the dog kinds, upon a very extensive membrane within the scull.

If we compare the natural habitudes of this class with the former, we shall find that the dog kinds are not so solitary as those of the cat, but love to hunt in company, and encourage each other with their mutual cries. In this manner the dog and the jackall pursue their prey; and the wolf and fox, which are of this kind, though more solitary and silent among us, yet, in countries where less persecuted, and where they can more fearless display their natural inclinations, they are found to keep together in packs, and pursue their game with alternate howlings.

Animals of the dog kind want some of the advantages of the cat kind, and yet are possessed of others in which the latter are deficient. Upon observing their claws, it will easily be perceived that they cannot, like cats, pursue their prey up the sides of a tree, and continue the chace among the branches; their unmanageable claws cannot stick in the bark, and thus support the body up along the trunk, as we see the cat very easily perform: whenever, therefore, their prey flies up the tree from them, they can only follow it with their eyes, or watch its motions till hunger again brings it to the ground. For this reason, the proper prey of the dog kind are only those animals that, like themselves, are unfitted for climbing; the hare, the rabbit, the gazelle, or the roe-buck.

As they are, in this respect, inferior to the cat, so they exceed it in the sense of smelling; by which

alone they pursue their prey with certainty of success, wind it through all its mazes, and tire it down by perseverance. It often happens, however, in the savage state, that their prey is either too much diminished, or too wary to serve for a sufficient supply. In this case, when driven to an extremity, all the dog kinds can live for some time upon fruits and vegetables, which, if they do not please the appetite, at least serve to appease their hunger.

Of all this tribe, the Dog has every reason to claim the preference, being the most intelligent of all known quadrupeds, and the acknowledged friend of mankind. The dog *, independent of the beauty of his form, his vivacity, force, and swiftness, is possessed of all those internal qualifications that can conciliate the affections of man, and make the tyrant a protector. A natural share of courage, an angry and ferocious disposition, renders the dog, in its savage state, a formidable enemy to all other animals: but these readily give way to very different qualities in the domestic dog, whose only ambition seems the desire to please: he is seen to come crouching along, to lay his force, his courage, and all his useful talents, at the feet of his master; he waits his orders, to which he pays implicit obedience; he consults his looks, and a single glance is sufficient to put him in motion; he is more faithful even than the most boasted among men; he is constant in his affections, friendly without interest, and grateful for the slightest favours; much more mindful of benefits received than injuries offered;

* The rest of this description of the dog is taken from M. Buffon; what I have added, is marked as before.

he is not driven off by unkindness; he still continues humble, submissive, and imploring; his only hope to be serviceable, his only terror to displease; he licks the hand that has been just lifted to strike him, and at last disarms resentment, by submissive perseverance.

More docile than man, more obedient than any other animal, he is not only instructed in a short time, but he also conforms to the dispositions and the manners of those who command him. He takes his tone from the house he inhabits; like the rest of the domestics, he is disdainful among the great, and churlish among clowns. Always assiduous in serving his master, and only a friend to his friends, he is indifferent to all the rest, and declares himself openly against such as seem to be dependent like himself. He knows a beggar by his clothes, by his voice, or his gestures, and forbids his approach. When at night the guard of the house is committed to his care, he seems proud of the charge; he continues a watchful centinel, he goes his rounds, scents strangers at a distance, and gives them warning of his being upon duty. If they attempt to break in upon his territories, he becomes more fierce, flies at them, threatens, fights, and either conquers alone, or alarms those who have most interest in coming to his assistance; however, when he has conquered, he quietly reposes upon the spoil, and abstains from what he has deterred others from abusing; giving thus at once a lesson of courage, temperance, and fidelity.

From hence we see of what importance this animal is to us in a state of nature. Supposing, for a moment, that the species had not existed, how

could man, without the assistance of the dog, have been able to conquer, tame, and reduce to servitude, every other animal? How could he discover, chase, and destroy, those that were noxious to him? In order to be secure, and to become master of all animated nature, it was necessary for him to begin by making a friend of a part of them; to attach such of them to himself, by kindness and caresses, as seemed fittest for obedience and active pursuit. Thus the first art employed by man, was in conciliating the favour of the dog; and the fruits of this art were, the conquest and peaceable possession of the earth.

The generality of animals have greater agility, greater swiftness, and more formidable arms, from nature, than man; their senses, and particularly that of smelling, are far more perfect: the having gained, therefore, a new assistant, particularly one whose scent is so exquisite as that of the dog, was the gaining a new sense, a new faculty, which before was wanting. The machines and instruments which we have imagined for perfecting the rest of the senses, do not approach to that already prepared by Nature, by which we are enabled to find out every animal, though unseen, and thus destroy the noxious, and use the serviceable.

The dog, thus useful in himself, taken into a participation of empire, exerts a degree of superiority over all animals that require human protection. The flock and the herd obey his voice more readily even than that of the shepherd or the herdsman; he conducts them, guards them, keeps them from capriciously seeking danger, and their enemies he considers as his own. Nor is he less useful in the

pursuit: when the sound of the horn, or the voice of the huntsman, calls him to the field, he testifies his pleasure by every little art, and pursues with perseverance, those animals which, when taken, he must not expect to divide. The desire of hunting is indeed natural to him as well as to his master, since war and the chace are the only employment of savages. All animals that live upon flesh hunt by nature: the lion and the tiger, whose force is so great that they are sure to conquer, hunt alone, and without art; the wolf, the fox, and the wild dog, hunt in packs, assist each other, and partake the spoil. But when education has perfected this talent in the domestic dog, when he has been taught by man to repress his ardour, to measure his motions, and not to exhaust his force by too sudden an exertion of it, he then hunts with method, and always with success.

" Although the wild dog, such as he was before he came under the protection of mankind, is at present utterly unknown, no such animal being now to be found in any part of the world, yet there are many that, from a domestic state, have turned savage, and entirely pursue the dictates of nature." In those deserted and uncultivated countries where the dog is found wild, they seem entirely to partake of the disposition of the wolf; they unite in large bodies, and attack the most formidable animals of the forest, the cougar, the panther, and the bison. In America, where they were originally brought by the Europeans, and abandoned by their masters, they have multiplied to such a degree, that they spread in packs over the whole country, attack all other animals, and even man himself does not pass

without insult. They are there treated in the same manner as all other carnivorous animals, and killed wherever they happen to come: however, they are easily tamed; when taken home, and treated with kindness and lenity, they quickly become submissive and familiar, and continue faithfully attached to their masters. Different in this from the wolf or the fox, who, though taken never so young, are gentle only while cubs, and, as they grow older, give themselves up to their natural appetites of rapine and cruelty. In short, it may be asserted, that the dog is the only animal whose fidelity is unshaken; the only one who knows his master, and the friends of the family; the only one who instantly distinguishes a stranger; the only one who knows his name, and answers to the domestic call; the only one who seems to understand the nature of subordination, and seeks assistance; the only one who, when he misses his master, testifies his loss by his complaints; the only one who, carried to a distant place, can find the way home; the only one whose natural talents are evident, and whose education is always successful.

In the same manner, as the dog is of the most complying disposition, so also is it the most susceptible of change in its form; the varieties of this animal being too many for even the most careful describer to mention. The climate, the food, and the education, all make strong impressions upon the animal, and produce alterations in its shape, its colour, its hair, its size, and in every thing but its nature. The same dog, taken from one climate, and brought to another, seems to become another animal; but different breeds are as much separated,

to all appearance, as any two animals the most distinct in nature. Nothing appears to continue constant with them, but their internal conformation; different in the figure of the body, in the length of the nose, in the shape of the head, in the length and the direction of the ears and tail, in the colour, the quality, and the quantity of the hair; in short, different in every thing but that make of the parts which serve to continue the species, and keep the animal distinct from all others. It is this peculiar conformation, this power of producing an animal that can re-produce, that marks the kind, and approximates forms that at first sight seem never made for conjunction.

From this single consideration, therefore, we may at once pronounce all dogs to be of one kind; but which of them is the original of all the rest, which of them is the savage dog from whence such a variety of descendants have come down, is no easy matter to determine. We may easily indeed observe, that all those animals which are under the influence of man, are subject to great variations. Such as have been sufficiently independent, so as to chuse their own climate, their own nourishment, and to pursue their own habitudes, preserve the original marks of nature, without much deviation; and it is probable, that the first of these is even at this day very well represented in their descendants. But such as man has subdued, transported from one climate to another, controlled in their manner of living, and their food, have most probably been changed also in their forms: particularly the dog has felt these alterations more strongly than any other of the domestic kinds; for living more like

man, he may be thus said to live more irregularly also, and, consequently, must have felt all those changes that such variety would naturally produce. Some other causes also may be assigned for this variety in the species of the dog; as he is perpetually under the eye of his master, when accident has produced any singularity in its productions, man uses all his art to continue this peculiarity unchanged; either by breeding from such as had those singularities, or by destroying such as happened to want them; besides, as the dog produces much more frequently than some other animals, and lives a shorter time, so the chance for its varieties will be offered in greater proportion.

But which is the original animal, and which the artificial or accidental variety, is a question which, as was said, is not easily resolved. If the internal structure of dogs of different sorts be compared with each other, it will be found, except in point of size, that in this respect they are exactly the same. This, therefore, affords no criterion. If other animals be compared with the dog internally, the wolf and the fox will be found to have the most perfect resemblance; it is probable, therefore, that the dog which most resembles the wolf or the fox externally, is the original animal of its kind; for it is natural to suppose, that as the dog most nearly resembles them internally, so he may be near them in external resemblance also, except where art or accident has altered his form. This being supposed, if we look among the number of varieties to be found in the dog, we shall not find one so like the wolf or the fox, as that which is called the Shepherd's Dog. This is that dog with long coarse hair on all parts except the

nose, pricked ears, and a long nose, which is common enough among us, and receives his name from being principally used in guarding and attending on sheep. This seems to be the primitive animal of his kind; and we shall be the more confirmed in this opinion, if we attend to the different characters which climate produces in this animal, and the different races of dogs which are propagated in every country; and, in the first place, if we examine those countries which are still savage, or but half civilized, where it is most probable the dog, like his master, has received but few impressions from art, we shall find the shepherd's dog, or one very like him, still prevailing amongst them. The dogs that have run wild in America, and in Congo, approach this form. The dog of Siberia, Lapland, and Iceland, of the Cape of Good Hope, of Madagascar, Madura, Calicut, and Malabar, have all a long nose, pricked ears, and resemble the shepherd's dog very nearly. In Guinea, the dog very speedily takes this form; for, at the second or third generation, the animal forgets to bark, his ears and his tail become pointed, and his hair drops off, while a coarser, thinner kind comes in the place. This sort of dog is also to be found in the temperate climates in great abundance, particularly among those who, preferring usefulness to beauty, employ an animal that requires very little instruction to be serviceable. Notwithstanding this creature's deformity, his melancholy and savage air, he is superior to all the rest of his kind in instinct; and, without any teaching, naturally takes to tending flocks, with an assiduity and vigilance that at once astonishes, and yet relieves his master.

In more polished and civilized places, the dog seems to partake of the universal refinement; and, like the men becomes more beautiful, more majestic, and more capable of assuming an education foreign to his nature. The dogs of Albany, of Greece, of Denmark, and of Ireland, are larger and stronger than those of any other kind. In France, Germany, Spain, and Italy, the dogs are of various kinds, like the men; and this variety seems formed by crossing the breed of such as are imported from various climates.

The shepherd's dog may, therefore, be considered as the primitive stock from whence these varieties are all derived. He makes the stem of that genealogical tree which has been branched out into every part of the world. This animal still continues pretty nearly in its original state among the poor in temperate climates; being transported into the colder regions, he grows less and more ugly among the Laplanders; but becomes more perfect in Iceland, Russia, and Siberia, where the climate is less rigorous, and the people more civilized. Whatever differences there may be among the dogs of these countries, they are not very considerable, as they all have strait ears, long and thick hair, a savage aspect, and do not bark either so often or so loud as dogs of the more cultivated kind.

The shepherd's dog, transported into the temperate climates, and among people entirely civilized, such as England, France, and Germany, will be divested of his savage air, his pricked ears, his rough, long, and thick hair, and, from the single influence of climate and food alone, will become either a Matin, a Mastiff, or an Hound. These three seem the

immediate descendants of the former; and from them the other varieties are produced.

The Hound, the Harrier, and the Beagle, seem all of the same kind; for although the bitch is covered but by one of them, yet in her litters are found puppies resembling all the three. This animal, transported into Spain or Barbary, where the hair of all quadrupeds becomes soft and long, will be there converted into the land-spaniel, and the water spaniel, and these of different sizes.

The Grey Matin Hound, which is the second branch, transported to the North, becomes the great Danish dog; and this, sent into the South, becomes the grey-hound, of different sizes. The same transported into Ireland, the Ukraine, Tartary, Epirus, and Albania, becomes the great wolf-dog, known by the name of the Irish wolf-dog.

The Mastiff, which is the third branch, and chiefly a native of England, when transported into Denmark becomes the little Danish dog; and this little Danish dog, sent into the tropical and warm climates, becomes the animal called the Turkish dog, without hair. All these races, with their varieties, are produced by the influence of climate, joined to the different food, education, and shelter, which they have received among mankind. All other kinds may be considered as mongrel races, produced by the concurrence of these, and found rather by crossing the breed than by attending to the individual. " As these are extremely numerous, and very different in different countries, it would be almost endless to mention the whole; besides, nothing but experience can ascertain the reality of those conjectures already made, although they have

so much the appearance of probability; and until that gives more certain information, we must be excused from entering more minutely into the subject.

"With regard to the dogs of our country in particular, the varieties are very great, and the number every day increasing. And this must happen in a country so open by commerce to all others, and where wealth is apt to produce capricious predilection. Here the ugliest and the most useless of their kinds will be entertained merely for their singularity: and, being imported only to be looked at, they will lose even that small degree of sagacity which they possessed in their natural climates. From this importation of foreign useless dogs, our own native breed is, I am informed, greatly degenerated, and the varieties now to be found in England much more numerous than they were in the times of Queen Elizabeth, when Doctor Caius attempted their natural history. Some of these he mentions are no longer to be found among us, although many have since been introduced, by no means so serviceable as those which have been suffered to decay.

"He divides the whole race into three kinds. The first is, the generous kind, which consists of the terrier, the harrier, and the blood-hound; the gaze-hound, the grey hound, the leymmer, and the tumbler; all these are used for hunting. Then the spaniel, the setter, and the water-spaniel, or finder, were used for fowling; and the spaniel, gentle, or lap dog, for amusement. The second is the farm kind, consisting of the shepherd's dog and the mastiff. And the third is the mongrel kind; consisting of the wappe, the turn-spit, and the dancer.

To these varieties we may add, at present, the bull-dog, the Dutch mastiff, the harlequin, the pointer, and the Dane, with a variety of lap-dogs, which as they are perfectly useless, may be considered as unworthy of a name.

"The Terrier is a small kind of hound*, with rough hair, made use of to force the fox or the badger out of their holes; or rather to give notice, by their barking, in what part of their kennel the fox or badger resides, when the sportsmen intend to dig them out.

"The Harrier, as well as the beagle and the fox-hound, are used for hunting; of all other animals, they have the quickest and most distinguishing sense of smelling. The properly breeding, matching, and training these, make up the business of many men's lives.

"The blood-hound was a dog of great use, and in high esteem among our ancestors. Its employ was to recover any game that had escaped wounded from the hunter, or had been killed, and stolen out of the forest. But it was still more employed in hunting thieves and robbers by their footsteps. At that time, when the country was less peopled than at present, and when, consequently, the footsteps of one man were less crossed and obliterated by those of others, this animal was very serviceable in such pursuits; but at present, when the country is every where peopled, this variety is quite worn out; probably because it was found of less service than formerly.†

* British Zoology.

[† Mr. Boyle relates that a person of quality, to make trial whether a young blood-hound was well instructed, caused one of his servants to walk to a town four miles off, and then to a market

"The Gaze-hound hunted, like our grey-hounds, by the eye and not by the scent. It chased indifferently the fox, hare, or buck. It would select from the herd the fattest and fairest deer, pursue it by the eye, and if lost recover it again with amazing sagacity. This species is now lost or unknown among us.

"The Grey-hound is very well known at present, and was formerly held in such estimation, that it was the peculiar companion of a gentleman; who, in the times of semi-barbarism, was known by his horse, his hawk, and his grey-hound. Persons under a certain rank of life are forbidden, by some late game-laws, from keeping this animal; wherefore, to disguise it the better, they cut off its tail.

"The Leymmer is a species now unknown to us. It hunted both by scent and sight, and was led in a leyme or thong, from whence it received its name.

"The Tumbler was less than the hound, more scraggy and had pricked ears; so that by the description it seems to answer to the modern lurcher. This took its prey by mere cunning, depending neither on the goodness of its nose nor its swiftness. If it came into a warren, it neither barked nor ran

town three miles from thence. The Dog, without the man he was to pursue, followed him by the scent to the above mentioned places, notwithstanding the multitude of market people that went along the same road, and of travellers that had occasion to cross it; and when the blood-hound came to the chief market-town, he passed through the streets without taking notice of any of the people there; and ceased not till he had gone to the house where the man he sought rested himself, and where he found him in an upper-room, to the wonder of those who had accompanied him in this pursuit.

on the rabbits; but, seemingly inattentive, approached sufficiently near till it came within reach, and then seized them by a sudden spring.

"The Land Spaniel, which probably had its name from Spain, where it might have acquired the softness of its hair, is well known at present. There are two varieties of this kind; namely, the Slater, used in hawking to spring the game; and the Setter, that crouches down when it scents the birds, till the net be drawn over them. I have read somewhere that the famous poet, Lord Surry, was the first who taught dogs to set; it being an amusement to this day only known in England.

"The Water Spaniel was another species used in fowling. This seems to be the most docile of all the dog kind; and this docility is particularly owing to his natural attachment to man. Many other kinds will not bear correction; but this patient creature, though very fierce to strangers, seems unalterable in his affections; and blows and ill-usage seem only to encrease his regard.

"The Lap-dog, at the time of Doctor Caius, was of Maltese breed; at present it comes from different countries; in general, the more aukward or extraordinary these are, the more they are prized.

"The Shepherd's Dog has been already mentioned, and as for the mastiff, he is too common to require a description. Doctor Caius tells us, that three of these were reckoned a match for a bear, and four for a lion. However, we are told that three of them overcame a lion in the times of King James the First; two of them being disabled in the combat, the third obliged the lion to seek for safety by flight.

" As to the last division, namely, of the Wappe, the Turnspit, and the Dancer, these were mongrels, of no certain shape, and made use of only to alarm the family, or, being taught a variety of tricks, were carried about as a show.

" With regard to those of later importation, the Bull-dog, as Mr. Buffon supposes, is a breed between the small Dane and the English mastiff. The large Dane is the tallest dog that is generally bred in England. It is somewhat between a mastiff and a grey-hound in shape, being more slender than the one, and much stronger than the other. They are chiefly used rather for shew than service, being neither good in the yard nor the field. The highest are most esteemed; and they generally cut off their ears to improve their figure, as some absurdly suppose. The harlequin is not much unlike the small Dane, being an useless animal, somewhat between an Italian greyhound and a Dutch mastiff. To these several others might be added, such as the pug-dog, the black breed, and the pointer; but, in fact, the varieties are so numerous, as to fatigue even the most ardent curiosity." *

[* To these may be added the Newfoundland dog, so remarkable for its sagacity, and faithful attachment to its masters: and the Siberian dog, so well known in Kamtschatka for drawing sledges over the ice. The former of these is a large handsome animal, with a remarkably benevolent and pleasing countenance. They are web-footed, and can swim with great ease and swiftness.

During a severe storm, in the winter 1789, a ship belonging to Newcastle, was lost near Yarmouth, and a Newfoundland dog alone escaped to shore, bringing in his mouth the Captain's pocket-book. He landed amidst a number of people, several of whom in vain attempted to take from him his prize. The sagacious

Of these of the foreign kinds, I shall mention only three, which are more remarkable than any of the rest. The Lion Dog greatly resembles that animal, in miniature, from whence it takes the name. The hair of the fore part of the body is extremely long, while that of the hinder part is as short. The nose is short, the tail long, and tufted at the point, so that in all these particulars it is entirely like the lion. However, it differs very much from that fierce animal in nature and disposition, being one of the smallest animals of its kind, extremely feeble, timid, and inactive. It comes originally from Malta, where it is found so small, that women carry it about in their sleeves.

That animal falsely called the Turkish Dog, differs greatly from all the rest of the kind, in being entirely without hair. The skin, which is perfectly bare, is of a flesh colour, with brown spots; and their figure at first view is rather disgusting. These seem to be of the small Danish breed, brought into a warm climate, and there, by a succession of generations, divested of their hair. For this reason, they are extremely chilly, and unable to endure the cold of our climate; and even in the midst of summer they continue to shiver as we see men in a frosty day. Their spots are brown, as was said, well marked, and easily distinguishable in summer, but in the

animal, as if sensible of the importance of the charge, which, in all probability, was delivered to him by his perishing master, at length leapt fawningly against the breast of a man who had attracted his notice among the crowd, and delivered the book to him. The dog immediately returned to the place where he had landed, and watched with great attention for all the things that came from the wrecked vessel, seizing them, and endeavouring to bring them to land.

cold of winter they entirely disappear. They are called the Turkish breed, although brought from a much warmer climate; for some of them have been known to come from the warmest parts of Africa and the East-Indies.

"The last variety, and the most wonderful of all that I shall mention, is the Great Irish Wolf Dog; that may be considered as the first of the canine species. This animal, which is very rare even in the only country in the world where it is to be found, is rather kept for show than use, there being neither wolves nor any other formidable beasts of prey in Ireland, that seem to require so powerful an antagonist. The wolf-dog is therefore bred up in the houses of the great, or such gentlemen as chuse to keep him as a curiosity, being neither good for hunting the hare, the fox, or the stag, and equally unserviceable as an house-dog. Nevertheless, he is extremely beautiful and majestic to appearance, being the greatest of the dog kind to be seen in the world. The largest of those I have seen, and I have seen above a dozen, was about four feet high, or as tall as a calf of a year old. He was made extremely like a greyhound, but rather more robust, and inclining to the figure of the French matin, or the great Dane. His eye was mild, his colour white, and his nature seemed heavy and phlegmatic. This I ascribed to his having been bred up to a size beyond his nature; for we see in man, and all other animals, that such as are overgrown are neither so vigorous nor alert as those of more moderate stature. The greatest pains have been taken with these to enlarge the breed, both by food and matching. This end was effectually obtained,

indeed; for the size was enormous; but, as it seemed to me, at the expence of the animal's fierceness, vigilance, and sagacity. However, I was informed otherwise; the gentleman who bred them assuring me that a mastiff would be nothing when opposed to one of them, who generally seized their antagonist by the back: he added, that they would worry the strongest bull-dogs, in a few minutes, to death. But this strength did not appear either in their figure or their inclinations; they seemed rather more timid than the ordinary race of dogs; and their skin was much thinner, and consequently less fitted for combat. Whether with these disadvantages they were capable, as I was told, of singly coping with bears, others may determine; however, they have but few opportunities, in their own country, of exerting their strength, as all wild carnivorous animals there are only of the vermin kind. Mr. Buffon seems to be of opinion that these are the true Molossian dogs of the ancients; he gives no reason for this opinion, and I am apt to think it ill-grounded. Not to trouble the reader with a tedious critical disquisition, which I have all along avoided, it will be sufficient to observe, that Nemesianus, in giving directions for the choice of a bitch, advises to have one of Spartan or Molossian breed; and among several other perfections, he says that the ears should be dependent, and fluctuate as she runs*. This, however, is by no means the case with the Irish wolf-

* Elige tunc cursu facilem, facilemque recursu,
In Lacedæmonio natam seu rure Molosso—
Renibus ampla satis validis, diductaque coxas
Cuique nimis molles fluitent in cursibus aures.

NEMESIAN.

dog, whose ears resemble those of the grey-hound, and are far from fluctuating with the animal's motions. But of whatever kinds these dogs may be, whether known among the ancients, or whether produced by a later mixture, they are now almost quite worn away, and are very rarely to be met with even in Ireland. If carried to other countries, they soon degenerate; and even at home, unless great care be taken, they quickly alter. They were once employed in clearing the island of wolves, which infested it in great plenty; but these being destroyed, the dogs also are wearing away, as if Nature meant to blot out the species, when they had no longer any services to perform.

" In this manner several kinds of animals fade from the face of nature, that were once well known, but are now seen no longer. The enormous elk of the same kingdom, that, by its horns, could not have been less than eleven feet high, the wolf, and even the wolf-dog, are extinct, or only continued in such a manner as to prove their former plenty and existence. From hence it is probable that many of the nobler kinds of dogs, of which the ancients have given us such beautiful descriptions, are now utterly unknown; since among the whole breed we have not one that will venture to engage the lion or the tiger in single combat. The English bull-dog is perhaps the bravest of the kind; but what are his most boasted exploits to those mentioned of the Epirotic dogs by Pliny, or the Indian dogs by Ælian? The latter gives us a description of a combat between a dog and a lion, which I will take leave to translate.

" When Alexander was pursuing his conquests

in India, one of the principal men of that country was desirous of shewing him the value of the dogs which his country produced. Bringing his dog into the king's presence, he ordered a stag to be let loose before him, which the dog, despising as an unworthy enemy, remained quite regardless of the animal, and never once stirred from his place. His master then ordered a wild boar to be set out; but the dog thought even this a despicable foe, and remained calm and regardless as before. He was next tried with a bear; but still despising his enemy, he only waited for an object more worthy of his courage and his force. At last, they brought forth a tremendous lion, and then the dog acknowledged his antagonist, and prepared for combat. He instantly discovered a degree of ungovernable ardour; and, flying at the lion with fury, seized him by the throat, and totally disabled him from resistance. Upon this, the Indian, who was desirous of surprising the king, and knowing the constancy and bravery of his dog, ordered his tail to be cut off; which was easily performed, as the bold animal was employed in holding the lion. He next ordered one of his legs to be broken; which, however, did not in the least abate the dog's ardour, but he still kept his hold as before. Another leg was then broken; but the dog, as if he had suffered no pain, only pressed the lion still the more. In this cruel manner, all his legs were cut off, without abating his courage; and at last, when even his head was separated from his body, the jaws seemed to keep their former hold. A sight so cruel did not fail to affect the king with very strong emotions, at once pitying the dog's fate, and

admiring his fortitude. Upon which the Indian, seeing him thus moved, presented him with four dogs of the same kind, which in some measure alleviated his uneasiness for the loss of the former.

"The breed of dogs, however, in that country, is at present very much inferior to what this story seems to imply; since, in many places, instead of dogs, they have animals of the cat kind for hunting. In other places also, this admirable and faithful animal, instead of being applied to his natural uses, is only kept to be eaten. All over China there are dog-butchers, and shambles appointed for selling their flesh. In Canton, particularly, there is a street appointed for that purpose; and what is very extraordinary, wherever a dog-butcher appears, all the dogs of the place are sure to be in full cry after him; they know their enemy, and persecute him as far as they are able." Along the coasts of Guinea, their flesh is esteemed a delicacy by the Negroes; and they will give one of their cows for a dog. But, among this barbarous and brutal people, scarcely any thing that has life comes amiss; and they may well take up with a dog, since they consider toads, lizards, and even the flesh of the tiger itself, as a dainty. It may perhaps happen that the flesh of this animal, which is so indifferent in the temperate climates, may assume a better quality in those which are more warm; but it is more than probable that the diversity is rather in man than in the flesh of the dog; since in the cold countries the flesh is eaten with equal appetite by the savages; and they have their dog-feasts in the same manner as we have ours for venison.

In our climate, the wild animals that most approach the dog are the wolf and the fox; these in their internal conformation greatly resemble each other, and yet in their natures are very distinct. The ancients asserted that they bred together; and I am assured by credible persons, that there are many animals in this country bred between a dog and a fox. However, all the endeavours of Mr. Buffon to make them engender, as he assures us, were ineffectual. For this purpose, he bred up a young wolf, taken in the woods, at two months old, with a matin dog of the same age. They were shut up together, without any other, in a large yard, where they had a shelter for retiring. They neither of them knew any other individual of their kind, nor even any other man but he who had the charge of feeding them. In this manner they were kept for three years; still with the same attention, and without constraining or tying them up. During the first year the young animals played with each other continually, and seemed to love each other very much. In the second year they began to dispute about their victuals, although they were given more than they could use. The quarrel always began on the wolf's side. They were brought their food, which consisted of flesh and bones, upon a large wooden platter, which was laid on the ground. Just as it was put down, the wolf, instead of falling to the meat, began by driving off the dog; and took the platter in his teeth so expertly, that he let nothing of what it contained fall upon the ground; and in this manner carried it off; but as he could not entirely escape, he was frequently seen to run with it round the yard five or six times, still

carrying it in a position that none of its contents could fall. In this manner it would continue running, only now and then stopping to take breath, until the dog coming up, the wolf would leave the victuals to attack him. The dog, however, was the stronger of the two; but as it was more gentle, in order to secure him from the wolf's attack, he had a collar put round his neck. In the third year, the quarrels of these ill-paired associates were more vehement, and their combats more frequent; the wolf, therefore, had a collar put about its neck, as well as the dog, who began to be more fierce and unmerciful. During the two first years, neither seemed to testify the least tendency towards engendering; and it was not till the end of the third, that the wolf, which was the female, shewed the natural desire, but without abating either in its fierceness or obstinacy. This appetite rather encreased than repressed their mutual animosity; they became every day more intractable and ferocious, and nothing was heard between them but the sounds of rage and resentment. They both, in less than three weeks, became remarkably lean, without ever approaching each other, but to combat. At length, their quarrels became so desperate, that the dog killed the wolf, who was become more weak and feeble; and he was soon after himself obliged to be killed, for, upon being set at liberty, he instantly flew upon every animal he met, fowls, dogs, and even men themselves not escaping his savage fury.

The same experiment was tried upon foxes, taken young, but with no better success; they were never

found to engender with dogs; and our learned naturalist seems to be of opinion that their natures are too opposite ever to provoke mutual desire. One thing, however, must be remarked, that the animals on which he tried his experiments were rather too old when taken, and had partly acquired their natural savage appetites, before they came into his possession. The wolf, as he acknowledges, was two or three months old before it was caught, and the foxes were taken in traps. It may, therefore, be easily supposed, that nothing could ever after thoroughly tame those creatures, that had been suckled in the wild state, and had caught all the habitudes of the dam. I have seen these animals, when taken earlier in the woods, become very tame; and, indeed, they rather were displeasing by being too familiar than too shy. It were to be wished that the experiment were tried upon such as these; and it is more than probable that it would produce the desired success. Nevertheless, these experiments are sufficient to prove that neither the wolf nor the fox are of the same nature with the dog, but each of a species perfectly distinct, and their joint produce most probably unfruitful.

The dog, when first whelped, is not a completely finished animal. In this kind, as in all the rest which bring forth many at a time, the young are not so perfect as in those which bring forth but one or two. They are always produced with the eyes closed, the lids being held together, not by sticking, but by a kind of thin membrane, which is torn as soon as the upper eye-lid becomes strong enough to raise it from the under. In general,

their eyes are not opened till ten or twelve days old. During that time, the bones of the scull are not completed, the body is puffed up, the nose is short, and the whole form but ill sketched out. In less than a month the puppy begins to use all its senses; and, from thence, makes hasty advances to its perfection. At the fourth month the dog loses some of his teeth, as in other animals, and these are renewed by such as never fall. The number of these amount to forty-two, which is twelve more than is found in any of the cat kind, which are known never to have above thirty. The teeth of the dog, being his great and only weapon, are formed in a manner much more serviceable than those of the former; and there is scarce any quadruped that has a greater facility in rending, cutting, or chewing its food. He cuts with his incisors, or fore-teeth, he holds with his four great canine teeth, and he chews his meat with his grinders; these are fourteen in number, and so placed that, when the jaws are shut, there remains a distance between them, so that the dog, by opening his mouth ever so wide, does not lose the power of his jaws. But it is otherwise in the cat kind, whose incisors or cutting teeth are very small, and whose grinding teeth, when brought together, touch more closely than those of the dog, and, consequently, have less power. Thus, for instance, I can squeeze any thing more forcibly between my thumb and fore-finger, where the distance is greater, than between any other two fingers, whose distance from each other is less.

This animal is capable of re-producing at the

age of twelve months*, goes nine weeks with young, and lives to about the age of twelve years. Few quadrupeds are less delicate in their food; and yet there are many kinds of birds which the dog will not venture to touch. He is even known, although in a savage state, to abstain from injuring some which one might suppose he had every reason to oppose. The dogs and the vultures which live wild about Grand Cairo in Egypt, (for the Mahometan law has expelled this useful animal from human society) continue together in a very sociable and friendly manner†. As they are both useful in devouring such carcases as might otherwise putrefy, and thus infect the air, the inhabitants supply them with provisions every day, in order to keep them near the city. Upon these occasions, the quadrupeds and birds are often seen together tearing the same piece of flesh, without the least enmity; on the contrary, they are known to live together with a kind of affection, and bring up their young in the same nest.

Although the dog is a voracious animal, yet he can bear hunger for a very long time. We have an instance, in the Memoirs of the Academy of Sciences, of this kind, in which a bitch that had been forgotten in a country-house, lived forty days, without any other nourishment than the wool of a quilt

* To this description I will beg leave to add a few particulars from Linnæus, as I find them in the original. Vomitua gramina purgatur: cacat supra lapidem. Album græcum antisepticum summum. Mingit ad latus (this, however, not till the animal is nine months old) cum hospite sæpe centies. Odorat anum alterius. Procis rixantibus crudelis. Menstruans coit cum variis. Mordet illa illos. Cohæret copula junctus.

† Hasselquist Iter Palæstin. p. 232.

which she had torn in pieces. It should seem that water is more necessary to the dog than food ; he drinks often, though not abundantly; and it is commonly believed, that when abridged in water, he runs mad. This dreadful malady, the consequences of which are so well known, is the greatest inconvenience that results from the keeping this faithful domestic. But it is a disorder by no means so frequent as the terrors of the timorous would suppose ; the dog has been often accused of madness, without a fair trial ; and some persons have been supposed to receive their deaths from his bite, when either their own ill-grounded fears, or their natural disorders, were the true cause.*

[* Upon the authority of the celebrated Leibnitz, as communicated to the Royal Academy of France, we are informed of the singularly curious circumstance, of a dog being able to call in a distinct and intelligible manner, for tea, coffee, chocolate, and other articles This animal belonged to a peasant of Saxony, and was of a middling size. A little boy, the peasant's son, fancied he perceived in the dog's voice an indistinct resemblance of certain words, and therefore took it into his head to teach him to speak. For this purpose he spared neither time nor pains with his pupil, who was about three years old when this his learned education commenced ; and at length made such a progress in language, as to be able to articulate no less than thirty words. It appears however, that he was somewhat of a truant, and did not willingly exert his talents, being rather pressed into the service of literature ; and it was necessary that the words should be first pronounced to him each time, which he as it were, echoed to his preceptor. Leibnitz however attests that he himself heard him speak ; and the French Academicians add, that unless they had received the testimony of so great a man as Leibnitz, they should hardly have dared to report the circumstance.

The Wolf.

The dog and the wolf are so very much alike internally, that the most expert anatomists can scarcely perceive the difference; and it may be asserted also, that, externally, some dogs more nearly resemble the wolf than they do each other. It was this strong similitude that first led some naturalists to consider them as the same animal, and to look upon the wolf as the dog in its state of savage freedom: however, this opinion is entertained no longer; the natural antipathy those two animals bear to each other, the longer time which the wolf goes with young than the dog, the one going over an hundred days, and the other not quite sixty; the longer period of life in the former than the latter, the wolf living twenty years, the dog not fifteen; all sufficiently point out a distinction, and draw a line that must for ever keep them asunder.

The Wolf, from the tip of the nose to the insertion of the tail, is about three feet seven inches long, and about two feet five inches high; which shews him to be larger than our great breed of mastiffs, which are seldom found to be above three feet by two. His colour is a mixture of black, brown, and grey, extremely rough and hard, but mixed towards the roots with a kind of ash-coloured fur. In comparing him to any of our well-known breed of dogs, the great Dane, or mongrel greyhound, for instance, he will appear to have the legs shorter, the head larger, the muzzle thicker, the eyes smaller, and more separated from each other, and the ears shorter and straiter. He appears, in every respect, stronger

De Seve del. Warner sc.

The Wolf.

than the dog; and the length of his hair contributes still more to his robust appearance. The feature which principally distinguishes the visage of the wolf from that of the dog, is the eye, which opens slantingly upwards, in the same direction with the nose; whereas, in the dog, it opens more at right angles with the nose, as in man. The tail also, in this animal, is long and bushy; and he carries it rather more between his hind legs than the dog is seen to do. The colour of the eye-balls in the wolf are of a fiery green, and gives his visage a fierce and formidable air, which his natural disposition does by no means contradict*.

The wolf is one of those animals whose appetite for animal food is the most vehement; and whose means of satisfying this appetite are the most various. Nature has furnished him with strength, cunning, agility, and all those requisites which fit an animal for pursuing, overtaking, and conquering its prey; and yet, with all these, the wolf most frequently dies of hunger, for he is the declared enemy of man. Being long proscribed, and a reward offered for his head, he is obliged to fly from human habitations, and to live in the forest, where the few wild animals to be found there escape him either by their swiftness or their art; or are supplied in too small a proportion to satisfy his rapacity. He is naturally dull and cowardly; but frequently disappointed, and as often reduced to the verge of famine, he becomes ingenious from want, and courageous from necessity. When pressed with hunger, he braves dan-

* The rest of this history of the wolf is taken from M. Buffon, and I look upon it as a complete model for natural history. If I add or differ, I mark it as usual.

ger, and comes to attack those animals which are under the protection of man, particularly such as he can readily carry away; lambs, sheep, or even dogs themselves, for all animal food becomes then equally agreeable. When this excursion has succeeded, he often returns to the charge, until having been wounded or hard pressed by the dogs, or the shepherds, he hides himself by day in the thickest coverts, and only ventures out at night; he then sallies forth over the country, keeps peering round the villages, carries off such animals as are not under protection, attacks the sheep-folds, scratches up and undermines the thresholds of doors where they are housed, enters furious, and destroys all before he begins to fix upon and carry off his prey. When these sallies do not succeed, he then returns to the thickest part of the forest, content to pursue those smaller animals, which, even when taken, afford him but a scanty supply. He there goes regularly to work, follows by the scent, opens to the view, still keeps following, hopeless himself of overtaking the prey, but expecting that some other wolf will come in to his assistance, and then content to share the spoil. At last, when his necessities are very urgent, he boldly faces certain destruction; he attacks women and children, and sometimes ventures even to fall upon men, becomes furious by his continual agitations, and ends his life in madness.

The wolf, as well externally as internally, so nearly resembles the dog, that he seems modelled upon the same plan; and yet he only offers the reverse of the medal. If his form be like, his nature is so different, that he only preserves the ill qualities of the dog, without any of his good ones. Indeed,

they are so different in their dispositions, that no two animals can have a more perfect antipathy to each other. A young dog shudders at the sight of a wolf; he even shuns his scent, which, though unknown, is so repugnant to his nature, that he comes trembling to take protection near his master. A dog who is stronger, and who knows his strength, bristles up at the sight, testifies his animosity, attacks him with courage, endeavours to put him to flight, and does all in his power to rid himself of a presence that is hateful to him. They never meet without either flying or fighting: fighting for life and death, and without mercy on either side. If the wolf is the stronger, he tears and devours his prey; the dog, on the contrary, is more generous, and contents himself with his victory; he does not seem to think that *the body of a dead enemy smells well;* he leaves him where he falls, to serve as food for birds of prey, or for other wolves, since they devour each other; and when one wolf happens to be desperately wounded, the rest track him by his blood, and are sure to shew him no mercy.

The dog, even in his savage state, is not cruel; he is easily tamed, and continues firmly attached to his master. The wolf, when taken young, becomes tame, but never has an attachment; nature is stronger in him than education; he resumes, with age, his natural dispositions, and returns, as soon as he can, to the woods from whence he was taken. Dogs, even of the dullest kinds, seek the company of other animals; they are naturally disposed to follow and accompany other creatures beside themselves; and even by instinct, without any education,

take to the care of flocks and herds. The wolf, on the contrary, is the enemy of all society; he does not even keep much company with those of his kind. When they are seen in packs together, it is not to be considered as a peaceful society, but a combination for war: they testify their hostile intentions by their loud howlings, and by their fierceness discover a project for attacking some great animal, such as a stag or a bull, or to destroy some more redoubtable watch-dog. The instant their military expedition is completed, their society is at an end; they then part, and each returns in silence to his solitary retreat. There is not even any strong attachments between the male and female; they seek each other only once a year, and remain but a few days together: they always couple in winter; at which time several males are seen following one female, and this association is still more bloody than the former: they dispute most cruelly, growl, bark, fight, and tear each other; and it sometimes happens that the majority kill the wolf which has been chiefly preferred by the female. It is usual for the she-wolf to fly from them all with him she has chosen; and watches this opportunity when the rest are asleep.

The season for coupling does not continue above twelve or fifteen days; and usually commences among the oldest, those which are young being later in their desires. The males have no fixed time for engendering; they pass from one female to the other, beginning at the end of December, and ending at the latter end of February. The time of pregnancy is about three months and an half; and the young wolves are found from the

latter end of April to the beginning of July. The long continuance of the wolf's pregnancy is sufficient to make a distinction between it and the dog; did not also the fiery fierceness of the eyes, the howl instead of barking, and the greater duration of its life, leave no doubt of its being an animal of its own particular species. In other respects, however, they are entirely alike; the wolf couples exactly like the dog, the parts are formed in the same manner, and their separation hindered by the same cause. When the she-wolves are near their time of bringing forth, they seek some very tufted spot, in the thickest part of the forest; in the middle of this they make a small opening, cutting away the thorns and briars with their teeth, and afterwards carry thither a great quantity of moss, which they form into a bed for their young ones. They generally bring forth five or six, and sometimes even to nine at a litter. The cubs are brought forth, like those of the bitch, with the eyes closed; the dam suckles them for some weeks, and teaches them betimes to eat flesh, which she prepares for them, by chewing it first herself. Some time after she brings them stronger food, hares, partridges, and birds yet alive. The young wolves begin by playing with them, and end by killing them. The dam then strips them of their feathers, tears them in pieces, and gives to each of them a share. They do not leave the den where they have been littered, till they are six weeks or two months old. They then follow the old one, who leads them to drink to the trunk of some old tree where the water has settled, or at some pool in the neighbourhood. If she apprehends any danger, she instantly

conceals them in the first convenient place, or brings them back to their former retreat. In this manner they follow her for some months; when they are attacked, she defends them with all her strength, and more than usual ferocity. Although, at other times, more timorous than the male, at that season she becomes bold and fearless; willing perhaps to teach the young ones future courage by her own example. It is not till they are about ten or twelve months old, and until they have shed their first teeth, and completed the new, that she thinks them in a capacity to shift for themselves. Then when they have acquired arms from Nature, and have learned industry and courage from her example, she declines all future care of them, being again engaged in bringing up a new progeny.

The males and females are in a capacity to engender when two years old. It is probable that the females of this species, as well as of most others, are sooner completed than the males; but this is certain, that they never desire to copulate until their second winter; from whence we may suppose that they live fifteen or twenty years; for, allowing three years for their complete growth, this multiplied by seven gives them a life of twenty-one; most animals, as has been observed, living about seven times the number of years which they take to come to perfection. Of this, however, there is as yet no certainty, no more than of what huntsmen assert, that in all the litters there are more males than females. From them also we learn that there are some of the males who attach themselves to the female, who accompany her during her gestation, until the time of bringing forth, when she hides

the place of her retreat from the male, lest he should devour her cubs. But after this, when they are brought forth, that he then takes the same care of them as the female, carries them provisions, and, if the dam should happen to be killed, rears them up in her stead.

The wolf grows grey as he grows old, and his teeth wear, like those of most other animals, by using. He sleeps when his belly is full, or when he is fatigued, rather by day than night; and always, like the dog, is very easily waked. He drinks frequently; and in times of drought, when there is no water to be found in the trunks of old trees, or in the pools about the forest, he comes often, in the day, down to the brooks, or the lakes in the plain. Although very voracious, he supports hunger for a long time, and often lives four or five days without food, provided he be supplied with water.

The wolf has great strength, particularly in his fore-parts, in the muscles of his neck and his jaws. He carries off a sheep in his mouth without letting it touch the ground, and runs with it much swifter than the shepherds who pursue him; so that nothing but the dogs can overtake, and oblige him to quit his prey. He bites cruelly, and always with greater vehemence in proportion as he is least resisted; for he uses precautions with such animals as attempt to stand upon the defensive. He is ever cowardly, and never fights but when under a necessity of satisfying hunger, or making good his retreat. When he is wounded by a bullet, he is heard to cry out; and yet, when surrounded by the peasants, and attacked with clubs, he never howls as the dog under correction, but defends himself in silence, and dies as hard as he lived.

His nature is, in fact, more savage than that of the dog; he has less sensibility and greater strength. He travels, runs, and keeps plundering for whole days and nights together. He is in a manner indefatigable; and perhaps of all animals he is the most difficult to be hunted down. The dog is good-natured and courageous; the wolf, though savage, is ever fearful. If he happens to be caught in a pit-fall, he is for some time so frightened and astonished, that he may be killed without offering to resist, or taken alive without much danger. At that instant, one may clap a collar round his neck, muzzle him, and drag him along, without his ever giving the least signs of anger or resentment. At all other times he has his senses in great perfection; his eye, his ear, and particularly his sense of smelling, which is even superior to the two former. He smells a carcase at more than a league's distance; he also perceives living animals a great way off, and follows them a long time upon the scent. Whenever he leaves the wood, he always takes care to go out against the wind. When just come to its extremity, he stops to examine, by his smell, on all sides, the emanations that may come either from his enemy or his prey, which he very nicely distinguishes. He prefers those animals which he kills himself to those he finds dead; and yet he does not disdain these when no better is to be had. He is particularly fond of human flesh; and perhaps, if he were sufficiently powerful, he would eat no other. Wolves have been seen following armies, and arriving in numbers upon the field of battle, where they devoured such dead bodies as were left upon the field, or but negligently interred. These, when once

accustomed to human flesh, ever after seek particularly to attack mankind, and chuse to fall upon the shepherd rather than his flock. We have had a late instance of two or three of these keeping a whole province, for more than a month, in a continual alarm.

It sometimes happens that a whole country is called out to extirpate these most dangerous invaders. The hunting the wolf is a favourite diversion among the great of some countries; and it must be confessed it seems to be the most useful of any. These animals are distinguished by the huntsmen into the *young wolf*, the *old wolf*, and the *great wolf*. They are known by the prints of their feet; the older the wolf, the larger the track he leaves. That of the female is narrower and longer than that of the male. It is necessary to have a very good starter to put up the wolf; and it is even convenient to use every art to encourage him in his pursuit; for all dogs have a natural repugnance against this animal, and are but cold in their endeavours. When the wolf is once put up, it is then proper to have greyhounds to let fly at him, in leashes, one after the other. The first leash is sent after him in the beginning, seconded by a man on horseback; the second are let loose about half a mile farther, and the third when the rest of the dogs come up with, and begin to bait him. He for a long time keeps them off, stands his ground, threatens them on all sides, and often gets away; but usually the hunters arriving come in aid of the dogs, and help to dispatch him with their cutlasses. When the animal is killed, the dogs testify no appetite to enjoy their victory, but leave him where

he falls, a frightful spectacle, and even in death hideous.

The wolf is sometimes also hunted with harriers; but as he always goes straight forward, and often holds his speed for a whole day together, this kind of chace is tedious and disagreeable, at least if the harriers are not assisted by greyhounds, who may harass him at every view. Several other arts have been also used to take and destroy this noxious animal. He is surrounded and wounded by men and large house-dogs; he is secured in traps; he is poisoned by carcases prepared and placed for that purpose, and is caught in pit-falls. "Gesner tells us of a friar, a woman, and a wolf, being taken in one of these, all in the same night. The woman lost her senses with the fright, the friar his reputation, and the wolf his life." All these disasters, however, do not prevent this animal's multiplying in great numbers, particularly in countries where the woods are plenty. France, Spain, and Italy, are greatly infested with them; but England, Ireland, and Scotland, are happily set free.

King Edgar is said to be the first who attempted to rid this kingdom of such disagreeable inmates, by commuting the punishment for certain crimes into the acceptance of a number of wolf's tongues from each criminal*. However, some centuries after, these animals were again increased to such a degree, as to become the object of royal attention; accordingly Edward the First issued out his mandate to one Peter Corbet to superintend and assist in the destruction of them. They are said to have infested Ireland long after they were extirpated in

* British Zoology, p. 62.

England; however, the oldest men in that country remember nothing of these animals; and it is probable that there have been none there for more than a century past. Scotland also is totally free.

The colour of this animal differs according to the different climates where it is bred, and often changes even in the same country. Beside the common wolves, which are found in France and Germany, there are others with thicker hair, inclining to yellow. These are more savage and less noxious than the former, neither approaching the flocks nor habitations, and living rather by the chace than rapine. In the northern climates they are found some quite black, and some white all over. The former are larger and stronger than those of any other kinds.

The species is very much diffused in every part of the world, being found in Asia, Africa, and in America, as well as Europe. The wolves of Senegal resemble those of France, except that they are larger and much fiercer than those of Europe. Those of Egypt are smaller than those of Greece. In the East, the wolf is trained up for a shew, being taught to dance and play tricks; and one of these thus educated often sells for four or five hundred crowns. "It is said that in Lapland the wolf will never attack a rein-deer that is seen haltered; for this wary animal, being well acquainted with the nature of a trap, suspects one wherever it perceives a rope. However, when he sees the deer entirely at liberty, he seldom fails to destroy it.

"The wolf of North-America is blacker and much less than those in other parts of the world,

and approaches nearer in form to the dog than those of the ordinary kind *. In fact, they were made use of as such by the savages, till the Europeans introduced others; and even now, on the remoter shores, or the more inland parts of the country, the savages still make use of these animals in hunting. They are very tame and gentle; and those of this kind that are wild are neither so large nor so fierce as an European wolf, nor do they ever attack mankind. They go together in large packs by night to hunt the deer, which they do as well as any dogs in England; and it is confidently asserted that one of them is sufficient to run down a deer †. Whenever they are seen along the banks of those rivers near which the wandering natives pitch their huts, it is taken for granted that the bison or the deer are not far off; and the savages affirm that the wolves come with the tidings, in order to have the garbage, after the animal has been killed by the hunters. Catesby adds a circumstance relative to these animals, which, if true, invalidates many of M. Buffon's observations in the foregoing history. He asserts, that these being the only dogs used by the Americans, before the arrival of the Europeans among them, they have since engendered together, and that their breed has become prolific; which proves the dog and the wolf to be of the same species. It were to be wished that this fact were better ascertained; we should then know to a certainty in what a degree the dog and wolf resemble each other, as well in nature as in conformation; we might then, perhaps, be enabled to

* Brookes's Natural History, vol. i. p. 198.

† Dictionnaire Raisonnée, Loup.

improve the breed of our dogs, by bringing them back to their native forms and instincts; we might, by crossing the strain, restore that race of those bold animals which the ancients assure us were more than a match for the lion."

However this animal may be useful in North-America, the wolf of Europe is a very noxious animal, and scarcely any thing belonging to him is good, except his skin. Of this the furriers make a covering that is warm and durable, though coarse and unsightly. His flesh is very indifferent, and seems to be disliked by all other animals, no other creature being known to eat the wolf's flesh, except the wolf himself. He breathes a most fœtid vapour from his jaws, as his food is indiscriminate, often putrid, and seldom cleanly. In short, every way offensive, a savage aspect, a frightful howl, an insupportable odour, a perverse disposition, fierce habits, he is hateful while living, and useless when dead *.

[*The Wolf is sometimes affected with madness, in symptoms and consequences exactly similar to that which affects the dog. This disease, as it happens to them in the depth of winter, cannot be attributed to the great heat of the dog-days. In the northern parts of the world, they frequently in the spring, get upon the fields of ice adjoining the sea, for the purpose of preying upon the young seals, which they there find asleep: but vast pieces of the ice, occasionally detaching itself from the mass, they are carried with it to a great distance from the land, where they perish amidst the most hideous and dreadful howlings.

The Fox.

The Fox very exactly resembles the wolf and the dog internally; and, although he differs greatly from both in size and carriage, yet when we come to examine his shapes minutely, there will appear to be very little difference in the description. Were, for instance, a painter to draw from a natural historian's exactest description the figure of a dog, a wolf, and a fox, without having ever seen either, he would be very apt to confound all these animals together; or rather he would be unable to catch those peculiar out-lines that no description can supply. Words will never give any person an exact idea of forms any way irregular; for although they be extremely just and precise, yet the numberless discriminations to be attended to will confound each other, and we shall no more conceive the precise form, than we should be able to tell when one pebble more was added or taken away from a thousand. To conceive, therefore, how the fox differs in form from the wolf or the dog, it is necessary to see all three, or at least to supply the defects of description, by examining the difference in a print.

The fox is of a slenderer make than the wolf, and not near so large; for as the former is above three feet and a half long, so the other is not above two feet three inches. The tail of the fox also is longer in proportion, and more bushy; its nose is smaller, and approaching more nearly to that of the greyhound, and its hair softer. On the other hand, it differs from the dog in having its eyes

De Seve del.   Warner sc.

The Fox.

obliquely situated, like those of the wolf; its ears are directed also in the same manner as those of the wolf, and its head is equally large in proportion to its size. It differs still more from the dog in its strong offensive smell, which is peculiar to the species, and often the cause of their death. However, some are ignorantly of opinion that it will keep off infectious diseases, and they preserve this animal near their habitations for that very purpose.

The fox has since the beginning been famous for his cunning and his arts, and he partly merits his reputation *. Without attempting to oppose either the dogs or the shepherds, without attacking the flock, or alarming the village, he finds an easier way to subsist, and gains by his address what is denied to his strength or courage. Patient and prudent, he waits the opportunity for depredation, and varies his conduct with every occasion. His whole study is his preservation; although nearly as indefatigable, and actually more swift than the wolf, he does not entirely trust to either, but makes himself an asylum, to which he retires in case of necessity; where he shelters himself from danger, and brings up his young.

As among men, those who lead a domestic life are more civilized, and more endued with wisdom, than those who wander from place to place, so, in the inferior ranks of animated nature, the taking possession of an home supposes a degree of instinct which others are without †. The choice of the situation for this domicil, the art of making it con-

* Buffon, Renard. † Ibid.

venient, of hiding its entrance, and securing it against more powerful animals, are all so many marks of superior skill and industry. The fox is furnished with both, and turns them to his advantage. He generally keeps his kennel at the edge of the wood, and yet within an easy journey of some neighbouring cottage. From thence he listens to the crowing of the cock, and the cackling of the domestic fowls. He scents them at a distance; he seizes his opportunity, conceals his approaches, creeps slyly along, makes the attack, and seldom returns without his booty. If he be able to get into the yard, he begins by levelling all the poultry without remorse, and carrying off a part of the spoil, hides it at some convenient distance, and again returns to the charge. Taking off another fowl in the same manner, he hides that also, but not in the same place; and this he practises for several times together, until the approach of day, or the noise of the domestics, give him warning to retire. The same arts are practised when he finds birds entangled in springes laid for them by the fowler; the fox takes care to be beforehand, very expertly takes the bird out of the snare, hides it for three or four days, and knows very exactly when and where to return to avail himself of the hidden treasure. He is equally alert in seizing the young hares and rabbits, before they have strength enough to escape him, and when the old ones are wounded and fatigued, he is sure to come upon them in their moments of distress, and to shew them no mercy. In the same manner he finds out birds nests, seizes the partridge and the quail while sitting, and destroys a large quantity of game. The

wolf is most hurtful to the peasant, but the fox to the gentleman. In short, nothing that can be eaten seems to come amiss; rats, mice, serpents, toads, and lizards. He will, when urged by hunger, eat vegetables and insects; and those that live near the sea-coasts will, for want of other food, eat crabs, shrimps, and shell-fish. The hedge-hog in vain rolls itself up into a ball to oppose him. This determined glutton teizes it until it is obliged to appear uncovered, and then he devours it. The wasp and the wild bee are attacked with equal success. Although at first they fly out upon their invader, and actually oblige him to retire, this is but for a few minutes, until he has rolled himself upon the ground, and thus crushed such as stick to his skin; he then returns to the charge, and at last, by perseverance, obliges them to abandon their combs; which he greedily devours, both wax and honey.

The chace of the fox requires less preparation than that of the wolf, and it is also more pleasant and amusing. As dogs have a natural repugnance to pursue the wolf, so they are equally alert in following the fox; which chace they prefer even to that of the hare or the buck. The huntsmen, as upon other occasions, have their cant terms for every part of this chace. The fox the first year is called a *cub*; the second, a *fox*; and the third, an *old fox*; his tail is called the *brush* or *drag*, and his excrement the *billiting*. He is usually pursued by a large kind of harrier or hound, assisted by terriers, or a smaller breed, that follow him into his kennel, and attack him there. The instant he perceives himself pursued, he makes to his kennel, and takes refuge at the bottom of it, where for a while he

loses the cry of his enemies; but the whole pack coming to the mouth, redouble their vehemence and rage, and the little terrier boldly ventures in. It often happens that the kennel is made under a rock, or among the roots of old trees; and in such cases the fox cannot be dug out, nor is the terrier able to contend with him at the bottom of his hole. By this contrivance he continues secure; but when he can be dug out, the usual way is to carry him in a bag to some open country, and there set him loose before the hounds. The hounds and the men follow, barking and shouting wherever he runs; and the body being strongly employed, the mind has not time to make any reflection on the futility of the pursuit. What adds to this entertainment is the strong scent which the fox leaves, that always keeps up a full cry; although as his scent is stronger than that of the hare, it is much sooner evaporated. His shifts to escape, when all retreat is cut off to his kennel, are various and surprising. He always chuses the most woody country, and takes those paths that are most embarrassed with thorns and briars. He does not double, nor use the unavailing shifts of the hare; but flies in a direct line before the hounds, though at no very great distance; manages his strength; takes to the low and plashy grounds, where the scent will be less apt to lie; and at last, when overtaken, he defends himself with desperate obstinacy, and fights in silence to the very last gasp.

The fox, though resembling the dog in many respects, is nevertheless very distinct in his nature, refusing to engender with it; and though not testifying the antipathy of the wolf, yet discovering no-

thing more than an indifference. This animal also brings forth fewer at a time than the dog, and that but once a year. Its litter is generally from four to six, and seldom less than three. The female goes with young about six weeks, and seldom stirs out while pregnant, but makes a bed for her young, and takes every precaution to prepare for their production. When she finds the place of their retreat discovered, and that her young have been disturbed during her absence, she removes them one after the other in her mouth, and endeavours to find them out a place of better security. A remarkable instance of this animal's parental affection happened while I was writing this history, in the county of Essex. A she-fox that had, as it should seem, but one cub, was unkennelled by a gentleman's hounds near Chelmsford, and hotly pursued. In such a case, when her own life was in imminent peril, one would think it was not a time to consult the safety of her young; however, the poor animal, braving every danger, rather than leave her cub behind to be worried by the dogs, took it up in her mouth, and ran with it in this manner for some miles. As last, taking her way through a farmer's yard, she was assaulted by a mastiff, and at last obliged to drop her cub, which was taken up by the farmer. I was not displeased to hear that this faithful creature escaped the pursuit, and at last got off in safety. The cubs of the fox are born blind, like those of the dog; they are eighteen months or two years in coming to perfection, and live about twelve or fourteen years.

As the fox makes war upon all animals, so all others seem to make war upon him. The dog hunts

him with peculiar acrimony; the wolf is still a greater and more necessitous enemy, who pursues him to his very retreat. Some pretend to say that, to keep the wolf away, the fox lays at the mouth of its kennel a certain herb, to which the wolf has a particular aversion. This, which no doubt is a fable, at least shews that these two animals are as much enemies to each other as to all the rest of animated nature. But the fox is not hunted by quadrupeds alone; for the birds, who know him for their mortal enemy, attend him in his excursions, and give each other warning of their approaching danger. The daw, the magpye, and the black-bird conduct him along, perching on the hedges as he creeps below, and, with their cries and notes of hostility, apprize all other animals to beware; a caution which they perfectly understand, and put into practice. The hunters themselves are often informed by the birds of the place of his retreat, and set the dogs into those thickets where they see them particularly noisy and querulous. So that it is the fate of this petty plunderer to be detested by every rank of animals; all the weaker classes shun, and all the stronger pursue him.

The fox, of all wild animals, is most subject to the influence of climate; and there are found as many varieties in this kind almost as in any of the domestic animals *. The generality of foxes, as is well known, are red; but there are some, though not in England, of a greyish cast; and M. Buffon asserts that the tip of the tail in all foxes is white; which, however, is not so in those of this country.

* Buffon, Renard.

There are only three varieties of this animal in Great Britain, and these are rather established upon a difference of size than of colour or form. The greyhound fox is the largest, tallest, and boldest; and will attack a grown sheep. The mastiff fox is less, but more strongly built. The cur fox is the least and most common; he lurks about hedges and out-houses, and is the most pernicious of the three to the peasant and the farmer.

In the colder countries round the pole, the foxes are of all colours; black, blue, grey, iron-grey, silver-grey, white, white with red legs, white with black heads, white with the tip of the tail black, red with the throat and belly entirely white, and lastly with a stripe of black running along the back, and another crossing it at the shoulders *. The common kind, however, is more universally diffused than any of the former, being found in Europe, in the temperate climates of Asia, and also in America; they are very rare in Africa, and in the countries lying under the torrid zone. Those travellers who talk of having seen them at Calicut, and other parts of Southern India, have mistaken the jackall for the fox. The fur of the white fox is held in no great estimation, because the hair falls off; the blue fox-skins are also bought up with great avidity, from their scarceness; but the black fox-skin is of all others the most esteemed, a single skin often selling for forty or fifty crowns. The hair of these is so disposed, that it is impossible to tell which way the grain lies; for if we hold the skin by the head, the hair hangs to the tail; and if we

* Buffon, Renard.

hold it by the tail, it hangs down equally smooth and even to the head. These are often made into men's muffs, and are at once very beautiful and warm. In our temperate climate, however, furs are of very little service, there being scarcely any weather so severe in England from which our ordinary clothes may not very well defend us.

[Steller, who, during his abode on Bering's island, had many opportunities of studying the nature of the fox inhabiting the Arctic regions near the polar circle, describes them as far exceeding the common fox in impudence, cunning and roguery.

They forced themselves, says he, into our habitations by night as well as by day, stealing all they could carry off; even things that were of no use to them, as knives, sticks, and clothes. They were so extremely ingenious as to roll down our casks of provisions, several pounds in weight; and then steal the meat out with such skill, that at first we could not bring ourselves to ascribe the theft to them. While employed in stripping an animal of its skin, it has often happened that we could not avoid stabbing two or three foxes, from their rapacity in tearing the flesh out of our hands. If we buried it ever so carefully, and even added stones to the weight of the earth that was upon it; they not only found it out, but with their shoulders pushed away the stones, by lying under them, and in this manner helping one another. If in order to secure it, we put any animal on the top of a high post in the air; they either dug up the earth at the bottom, and thus tumbled the whole down, or one of them climbed up, and with incredible artifice and dexterity, threw down what was upon it.

They watched all our motions, and accompanied us in whatever we were about to do. If the sea threw up an animal of any kind, they devoured it before we could arrive to rescue it from them; and if they could not consume it all at once, they trailed it in portions to the mountains, where they buried it under stones before our eyes, running to and fro so long as any thing remained to be conveyed away: while this was doing, others stood on guard, and watched us. If they saw any one come at a distance, the whole troop would combine at once, and begin digging altogether in the sand, till even a beaver or sea bear in their possession would be so completely buried under the surface, that not a trace of it could be seen. In the night time, when we slept in the field, they came and pulled off our night-caps, and stole our gloves from under our heads, with the beaver coverings and the skins that we lay upon. In consequence of this, we always slept with our clubs in our hands, that if they awoke us, we might either drive them away or knock them down.

When we made a halt to rest by the way, they gathered around us, and played a thousand tricks in our view; and when we sat still, they approached us so near, that they gnawed the thongs of our shoes. If we lay down as if intending to sleep, they came and smelt at our noses, to find whether we were dead or alive. On our first arrival, they bit off the noses, fingers, and toes, of our dead while we were preparing the grave; and thronged in such a manner about the infirm and sick, that it was with difficulty we could keep them off.

Every morning we saw these audacious animals

patrolling about the sea lions and sea bears lying on the strand, smelling at such as were asleep, to discover whether some one of them might not be dead; if that happened to be the case, they proceeded to dissect them immediately; and soon afterwards, all were at work in dragging the parts away.

Because the sea-lions sometimes in their sleep overlay their young, the foxes in the morning examined the whole herd of them, one by one, as if conscious of this circumstance; and immediately dragged away the dead cubs from their dams.

As they would not suffer us to be at rest either by night or day, we became so exasperated against them, that we killed them young and old, and harassed them by every means we could devise. When we awoke in the morning, there always lay two or three that had been knocked on the head the preceding night, and I can safely affirm, that, during my stay upon the island, I killed above two hundred of these animals with my own hands. On the third day after my arrival, I knocked down with a club, within the space of three hours, upwards of seventy of them, and made a covering to my hut with their skins. They were so ravenous, that with one hand we could hold out to them a piece of flesh, and with a stick or axe in the other, could knock them down.

From all the circumstances that occurred during our stay, it was evident that these animals could never before have been acquainted with mankind; and that the dread of man is not innate with brutes, but must be grounded on long experience.

Like the common foxes, they were the most sleek

and full of hair in the months of October and November. In January and February the growth of this was too thick. In April and May they began to shed their coat; in the two following months they had only wool upon them, and appeared as if they went in waistcoats. In June they dropped their cubs, nine or ten at a brood, in holes and clefts of the rocks. They are so fond of their young, that to scare us away from them, they barked and yelled like dogs, by which they betrayed their covert; but no sooner did they perceive that their retreat was discovered, than they dragged away their young in their mouths, and endeavoured to conceal them in some secret place. On one of us killing the young, the dam would follow him with dreadful howlings, both day and night, for a hundred or more versts; and would not even then cease, till she had done her enemy some material injury, or was herself killed by him.

In heavy falls of snow, these animals bury themselves in it, where they lie as long as it continues of a sufficient depth. They swim across the rivers with great agility. Besides what the sea casts up, or what is destroyed by other beasts, they seize the sea-fowl by night on the cliffs, where it has settled to sleep; but on the contrary, they are themselves frequently the victims to the birds of prey. Though now found in such numbers on this island, they were probably conveyed thither from the continent, on the drift ice, and being afterwards nourished by the great quantity of animal substances thrown ashore by the sea, they became thus enormously multiplied.]

The Jackall.

THE Jackall is one of the commonest wild animals in the East; and yet there is scarcely any less known in Europe, or more confusedly described by natural historians. In general, we are assured that it resembles the fox in figure and disposition, but we are still ignorant of those nice distinctions by which it is known to be of a different species. It is said to be of the size of a middling dog, resembling the fox in the hinder parts, particularly the tail; and the wolf in the fore-parts, especially the nose. Its legs are shorter than those of the fox, and its colour is of a bright yellow, or sorrel, as we express it in horses. This is the reason it has been called in Latin the Golden Wolf; a name, however, which is entirely unknown in the countries where they are most common.

The species of the jackall is diffused all over Asia, and is found also in most parts of Africa, seeming to take up the place of the wolf, which in those countries is not so common. There seems to be many varieties among them; those of the warmest climates appear to be the largest, and their colour is rather of a reddish brown than of that beautiful yellow by which the smaller jackall is chiefly distinguished.

Although the species of the wolf approaches very near to that of the dog, yet the jackall seems to be placed between them; to the savage fierceness of the wolf it adds the impudent familiarity of the dog*. Its cry is an howl, mixed with barking, and

* Buffon, vol. xxvii. p. 52.

a lamentation resembling that of human distress. It is more noisy in its pursuits even than the dog, and more voracious than the wolf. The jackall never goes alone, but always in a pack of forty or fifty together. These unite regularly every day, to form a combination against the rest of the forest. Nothing then can escape them; they are content to take up with the smallest animals; and yet, when thus united, they have courage to face the largest. They seem very little afraid of mankind; but pursue their game to the very doors, without testifying either attachment or apprehension. They enter insolently into the sheep-folds, the yards, and the stables, and, when they can find nothing else, devour the leather harness, boots, and shoes, and run off with what they have not time to swallow.

They not only attack the living but the dead. They scratch up with their feet the new-made graves, and devour the corpse, how putrid soever. In those countries therefore where they abound, they are obliged to beat the earth over the grave, and to mix it with thorns, to prevent the jackalls from scraping it away. They always assist each other as well in this employment of exhumation, as in that of the chase. While they are at this dreary work, they exhort each other by a most mournful cry, resembling that of children under chastisement; and when they have thus dug up the body, they share it amicably between them. These, like all other savage animals, when they have once tasted of human flesh, can never after refrain from pursuing mankind. They watch the burying-grounds, follow armies, and keep in the rear of caravans. They may be considered as the vulture of the quadruped kind; every

thing that once had animal life, seems equally agreeable to them; the most putrid substances are greedily devoured; dried leather, and any thing that has been rubbed with grease, how insipid soever in itself, is sufficient to make the whole go down.

They hide themselves in holes by day, and seldom appear abroad till night-fall, when the jackall that has first hit upon the scent of some larger beast gives notice to the rest by an howl, which it repeats as it runs; while all the rest, that are within hearing, pack in to its assistance. The gazelle, or whatever other beast it may be, finding itself pursued, makes off towards the houses and the towns; hoping, by that means, to deter its pursuers from following: but hunger gives the jackall the same degree of boldness that fear gives the gazelle, and it pursues even to the verge of the city, and often along the streets. The gazelle, however, by this means, most frequently escapes; for the inhabitants sallying out, often disturb the jackall in the chace; and as it hunts by the scent, when once driven off it never recovers it again. In this manner we see how experience prompts the gazelle, which is naturally a very timid animal, and particularly fearful of man, to take refuge near him, considering him as the least dangerous enemy, and often escaping by his assistance.

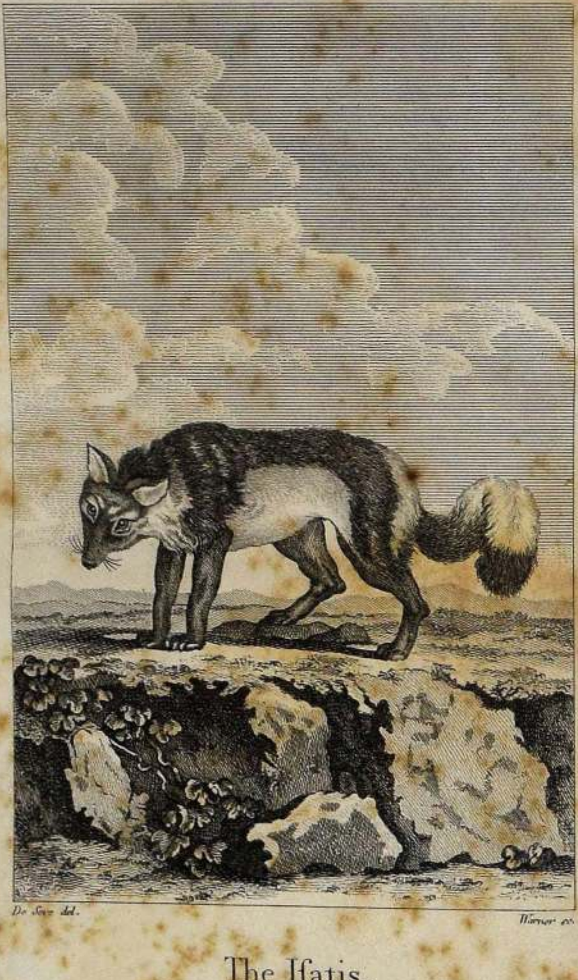
But man is not the only intruder upon the jackall's industry and pursuits. The lion, the tiger, and the panther, whose appetites are superior to their swiftness, attend to its call, and follow in silence at some distance behind*. The jackall pursues the whole night with unceasing assiduity, keeping up the cry, and with great perseverance at last tires down its

* Linnæi Systema, p. 60.

prey; but just at the moment it supposes itself going to share the fruits of its labour, the lion or the leopard comes in, satiates himself upon the spoil, and his poor provider must be content with the bare carcase he leaves behind. It is not to be wondered at therefore, if the jackall be voracious, since it so seldom has a sufficiency; nor that it feeds on putrid substances, since it is not permitted to feast on what it has newly killed. Beside these enemies, the jackall has still another to cope with, for between him and the dog there is an irreconcileable antipathy, and they never part without an engagement. The Indian peasants often chace them as we do foxes; and have learned, by experience, when they have got a lion or a tiger in their rear. Upon such occasions they keep their dogs close, as they would be no match for such formidable animals, and endeavour to put them to flight with their cries. When the lion is dismissed, they more easily cope with the jackall, who is as stupid as it is impudent, and seems much better fitted for pursuing than retreating. It sometimes happens that one of them steals silently into an out-house, to seize the poultry, or devour the furniture, but hearing others in full cry at a distance, without thought, it instantly answers the call, and thus betrays its own depredations. The peasants sally out upon it, and the foolish animal finds, too late, that its instinct was too powerful for its safety.

[The jackall is an inhabitant of the warmer regions of Asia and Africa, residing in rocky places and woods. Its stature is about that of a middling dog, which it resembles in its manner. When taken young it may be easily tamed, and like dogs they love to be fondled, wag their tails, and shew the same

attachment to their masters. Unlike most others of their kind, they are fond of playing with dogs. Their cry is said to be peculiarly hideous and loud. Mr. Sonnini relates an anecdote, highly characteristic of the cunning of the Thaleb or Barbary jackall. "One day, as I was meditating in a garden, I stopped near a hedge. A Thaleb hearing no noise, was coming through the hedge towards me; and when he had cleared himself, was just at my feet. On perceiving me, he was seized with such surprize, that he remained motionless for some seconds, without even attempting to escape, his eyes steadily fixed on me. Perplexity was painted in his countenance, by a degree of expression of which I could not have supposed him susceptible, and which denoted great delicacy of instinct. On my part, I was afraid to move, lest I should put an end to his situation, which afforded me much pleasure. At length, after he had taken a few steps, first towards one side and then the other, as if so confused as not to know which way to get off, and keeping his eyes still turned towards me, he retired; not running, but stretching himself out, or rather creeping with a slow step, setting down his feet one after another with singular precaution. He seemed so much afraid of making a noise in his flight, that he held up his large tail, almost in an horizontal line, that it might neither drag on the ground nor brush against the plants. On the other side of the hedge, I found the fragments of his meal; that had consisted of a bird of prey, great part of which he had devoured."



De Sève del. Warner sc.

The Isatis.

The Isatis.

AS the jackall is a sort of intermediate species between the dog and the wolf*, so the isatis may be considered as placed between the dog and the fox. This animal has hitherto been supposed to be only a variety of the latter; but from the latest observations, there is no doubt of their being perfectly distinct. The isatis is very common in all the northern countries bordering upon the Icy sea; and is seldom found, except in the coldest countries. It extremely resembles the fox, in the form of its body and the length of its tail; and a dog, in the make of its head and the position of its eyes. The hair of these animals is softer than that of a common fox; some are blue, some are white at one season, and at another of a russet brown. Although the whole of its hair be two inches long, thick, tufted and glossy, yet the under jaw is entirely without any, and the skin appears bare in that part.

This animal can bear only the coldest climates, and is chiefly seen along the coasts of the Icy sea, and upon the banks of the great rivers that discharge themselves therein. It is chiefly fond of living in the open country, and seldom seen in the forest, being mostly found in the mountainous and naked regions of Norway, Siberia, and Lapland. It burrows, like the fox; and when with young, the female retires to her kennel, in the same manner as the fox is seen to do. These holes, which

* In this description I have followed M. Buffon.

are very narrow, and extremely deep, have many out-lets. They are kept very clean, and are bedded at the bottom with moss, for the animal to be more at its ease. Its manner of coupling, time of gestation, and number of young, are all similar to what is found in the fox; and it usually brings forth at the end of May, or the beginning of June.

Such are the particulars in which this animal differs from those of the dog kind, and in which it resembles them; but its most striking peculiarity remains still to be mentioned; namely, its changing its colour, and being seen at one time brown, and at another perfectly white. As was already said, some are naturally blue, and their colour never changes; but such as are to be white, are, when brought forth, of a yellow hue, which, in the beginning of September, is changed to white, all except along the top of the back, along which runs a stripe of brown, and another crossing it down the shoulders, at which time the animal is called the *crost fox;* however, this brown cross totally disappears before winter, and then the creature is all over white, and its fur is two inches long: this, about the beginning of May, again begins to fall; and the molting is compleated about the middle of July, when the isatis becomes brown once more. The fur of this animal is of no value, unless it be killed in winter.

The Hyæna.

The hyæna is the last animal I shall mention among those of the dog kind, which it in many respects resembles, although too strongly marked

De Seve del. Warner sc.

The Hyæna.

to be strictly reduced to any type. The hyæna is nearly of the size of a wolf; and has some similitude to that animal in the shape of its head and body. The head, at first sight, does not appear to differ, except that the ears of the hyæna are longer, and more without hair; but, upon observing more closely, we shall find the head broader, the nose flatter, and not so pointed. The eyes are not placed obliquely, but more like those of a dog. The legs, particularly the hinder, are longer than those either of the dog or the wolf, and different from all other quadrupeds, in having but four toes, as well on the fore feet as on the hinder. Its hair is of a dirty greyish, marked with black, disposed in waves down its body. Its tail is short, with pretty long hair; and immediately under it above the anus, there is an opening into a kind of glandular pouch, which separates a substance of the consistence, but not of the odour, of civet. This opening might have given rise to the error of the ancients, who asserted, that this animal was every year, alternately, male and female. Such are the most striking distinctions of the hyæna, as given us by naturalists; which, nevertheless, convey but a very confused idea of the peculiarity of its form. Its manner of holding the head seems remarkable; somewhat like a dog pursuing the scent, with the nose near the ground. The head being held thus low, the back appears elevated, like that of the hog, which, with a long bristly band of hair that runs all along, gives it a good deal the air of that animal; and, it is probable that, from this similitude it first took its name, the word

huoina being Greek, and derived from *hus*, which signifies a sow *.

But no words can give an adequate idea of this animal's figure, deformity, and fierceness, more savage and untameable than any other quadruped, it seems to be for ever in a state of rage or rapacity, for ever growling, except when receiving its food. Its eyes then glisten, the bristles of its back all stand upright, its head hangs low, and yet its teeth appear; all which give it a most frightful aspect, which a dreadful howl tends to heighten. This, which I have often heard, is very peculiar: its beginning resembles the voice of a man moaning, and its latter part as if he were making a violent effort to vomit. As it is loud and frequent, it might, perhaps, have been sometimes mistaken for that of a human voice in distress, and have given rise to the accounts of the ancients, who tell us, that the hyæna makes its moan, to attract unwary

[* In Africa, especially about the Cape, is a species much resembling the common Hyæna, except that it is something larger, of a reddish brown colour with a black upright mane, and variegated all over the body with numerous roundish black spots. Dr. Sparmann tells a curious incident of this animal, for the truth of which however, he does not entirely vouch. " One night at a feast near the Cape, a trumpeter, who had got himself well filled with liquor, was carried out of doors in order to cool and sober him. The scent of him soon attracted a Tiger wolf, which threw him on his back and carried him away, thinking him a corpse, and consequently a fair prize, towards the table mountain. In the mean time, our drunken musician awoke, sufficiently sensible to know the danger of his situation, and to sound the alarm with his trumpet, which he carried fastened to his side. The beast, as may easily be imagined, was not less frightened in his turn, and the trumpeter escaped."

travellers, and then to destroy them; however this be, it seems the most untractable, and, for its size, the most terrible of all other quadrupeds; nor does its courage fall short of its ferocity; it defends itself against the lion, is a match for the panther, attacks the once, and seldom fails to conquer.

It is an obscene and solitary animal, to be found chiefly in the most desolate and uncultivated parts of the torrid zone, of which it is a native*. It resides in the caverns of mountains, in the clefts of rocks, or in dens that it has formed for itself under the earth. Though taken never so young, it cannot be tamed; it lives by depredation, like the wolf, but is much stronger, and more courageous. It sometimes attacks man, carries off cattle, follows the flock, breaks open the sheep-cots by night, and ravages with insatiable voracity. Its eyes shine by night; and it is asserted, not without great appearance of truth, that it sees better by night than by day. When destitute of other provision, it scrapes up the graves, and devours the dead bodies, how putrid soever. To these dispositions, which are sufficiently noxious and formidable, the ancients have added numberless others, which are long since known to be fables: as, for instance, that the hyæna, was male and female alternately; that having brought forth and suckled its young, it then changed sexes for a year, and became a male. This, as was mentioned above, could only proceed from the opening under the tail, which all animals of this species are found to have; and which is found in the same manner in no other quadrupeds,

* Buffon.

except the badger. There is in the weasel kind, indeed, an opening, but it is lower down, and not placed above the anus, as in the badger and the hyæna. Some have said that this animal changed the colour of its hair at will; others, that a stone was found in its eye, which, put under a man's tongue, gave him the gift of prophecy; some have said that he had no joints in the neck, which, however, all quadrupeds are known to have; and some, that the shadow of the hyæna, kept dogs from barking. These, among many other absurdities, have been asserted of this quadruped; and which I mention to shew the natural disposition of mankind, to load those that are already but too guilty, with accumulated reproach.

["I do not think, says Mr. Bruce, there is any one that hath hitherto written of this animal, who ever saw the thousandth part of them that I have. They were a plague in Abyssinia in every situation, both in the city and in the field, and I think surpassed the sheep in number. Gondar was full of them from the time it turned dark till the dawn of day, seeking the different pieces of slaughtered carcases, which this cruel and unclean people expose in the streets without burial, and who firmly believe that these animals are Talaska from the neighbouring mountains, transformed by magic, and come down to eat human flesh in the dark in safety. Many a time in the night, when the king had kept me late in the palace, and it was my duty not to lie there, in going across the park to the king's house, not many hundred yards distant, I have been apprehensive they would bite me in the leg. They grunted in great numbers about me, though I was sur-

rounded with several armed men, who seldom passed a night without wounding or slaughtering some of them.

One night in Maitsha, being very intent on observation, I heard something pass behind me towards the bed, but upon looking round could perceive nothing. Having finished what I was then about, I went out of my tent, resolving directly to return, which I immediately did, when I perceived two large blue eyes glaring at me in the dark. I called up my servant with a light; and we found an Hyena standing near the head of the bed, with two or three large bunches of candles in his mouth. To have fired at him, would have been at the risk of breaking my quadrant or other furniture; and he seemed, by keeping the candles steadily in his mouth, to wish for no other prey at that time. As his mouth was full, and he had no claw to tear with, I was not afraid of him; but with a pike struck him as near the heart as I could judge. It was not till then that he shewed any signs of fierceness; but upon feeling his wound, he let drop the candles, and endeavoured to run up the shaft of the spear to arrive at me, so that I was obliged to draw my pistol from my girdle and shoot him; and nearly at the same time my servant cleft his skull with a battle axe. In a word, the Hyena was the plague of our lives, the terror of our night walks, and the destruction of our mules and asses, which, above every thing else, are his favourite food."

Mr. Bruce likewise informs us, that this animal has the singular peculiarity of appearing lame, for a considerable distance, when it is first dislodged from its covert or obliged to run. This is

sometimes in so considerable a degree, as to induce the spectators to suppose that one of its hind legs had been broken: however, after running some time, this apparent affection goes off, and it escapes with great ease and celerity.]

CHAP. II.

*Of Animals of the Weasel Kind**.

HAVING described the bolder ranks of carnivorous animals, we now come to a minuter and more feeble class, less formidable indeed than any of the former, but far more numerous, and, in proportion to their size, more active and enterprising. The weasel kind may be particularly distinguished from other carnivorous animals, by the length and slenderness of their bodies, which are so fitted as to wind, like worms, into very small openings, after their prey; and hence also they have received the name of vermin, from their similitude to the worm in this particular. These animals differ from all of the cat kind, in the formation and disposition of their claws, which, as in the dog kinds, they can neither draw in nor extend at pleasure, as cats are known to do. They differ from the dog kind, in being clothed rather with fur than hair; and although some varieties of the fox may resemble

[* This tribe of animals have six sharpish cutting teeth, with the canine teeth something longer: the tongue is in some smooth, in others furnished with prickles pointing backwards: the body is of a slender lengthened form, with a sharpened visage, and short legs.]

them in this particular, yet the coat of the latter is longer, stronger, and always more resembling hair. Beside these distinctions, all animals of the weasel kind have glands placed near the anus, that either open into, or beneath it, furnishing a substance, that, in some, has the most offensive smell in nature, in others, the most pleasing perfume. All of this kind are still more marked by their habitudes and dispositions, than their external form; cruel, voracious, and cowardly, they subsist only by theft, and find their chief protection in their minuteness. They are all, from the shortness of their legs, slow in pursuit; and therefore owe their support to their patience, assiduity, and cunning. As their prey is precarious, they live a long time without food; and if they happen to fall in where it is in plenty, they instantly destroy all about them, before they begin to satisfy their appetite, and suck the blood of every animal, before they begin to touch its flesh.

These are the marks common to this kind, all the species of which have a most striking resemblance to each other; and he that has seen one, in some measure may be said to have seen all. The chief distinction in this numerous class of animals, is to be taken from the size; for no words can give the minute irregularities of that outline, by which one species is to be distinguished from that which is next it. I will begin, therefore, with the least and the best known of this kind, and still marking the size, will proceed gradually to larger and larger, until we come from the weasel to the glutton, which I take to be the largest of all. The weasel will serve as a model for all the rest; and, indeed, the

points in which they differ from this little animal, are but very inconsiderable.

The Weasel *, as was said, is the smallest of this numerous tribe; its length not exceeding seven inches, from the tip of the nose to the insertion of the tail. This length, however, seems to be very great, if we compare it with the height of the animal, which is not above an inch and an half. In measuring the wolf, we find him to be not above once and an half as long as he is high; in observing the weasel, we find it near five times as long as it is high, which shews an amazing disproportion. The tail also, which is bushy, is two inches and an half long, and adds to the apparent length of this little animal's body. The colour of the weasel is of a pale reddish brown on the back and sides, but white under the throat and the belly. It has whiskers like a cat, and thirty-two teeth, which is two more than any of the cat kind; and these also seem better adapted for tearing and chewing, than those of the cat kind are. The eyes are little and black; the ears short, broad, and roundish; and have a fold at the lower part, which makes them look as if they were double. Beneath the corners of the mouth, on each jaw, is a spot of brown.

This animal, though very diminutive to appearance, is, nevertheless, a very formidable enemy to quadrupeds an hundred times its own size. It is very common and well known in most parts of this country; but seems held in very different estimation, in different parts of it. In those places where sheep or lambs are bred, the weasel is a most noxious inmate, and every art is used to destroy it;

* British Zoology, vol. i. p. 83.

on the contrary, in places where agriculture is chiefly followed, the weasel is considered as a friend that thins the number of such vermin as chiefly live upon corn: however, in all places, it is one of the most untameable and untractable animals in the world*. When kept in a cage, either for the purposes of amusement or inspection, it will not touch any part of its victuals while any body looks on. It keeps in a continual agitation, and seems frighted so much at the sight of mankind, that it will die, if not permitted to hide itself from their presence. For this purpose, it must be provided, in its cage, with a sufficient quantity of wool or hay, in which it nceal itself, and where it may carry whatever it has got to eat; which, however, it will not touch until it begins to putrefy. In this state it is seen to pass three parts of the day in sleeping; and reserves the night for its times of exercise and eating.

In its wild state, the night is likewise the time during which it may be properly said to live. At the approach of evening, it is seen stealing from its hole, and creeping about the farmer's yard for its prey. If it enters the place where poultry are kept, it never attacks the cocks or the old hens, but immediately aims at the young ones. It does not eat its prey on the place, but, after killing it by a single bite near the head, and with a wound so small that the place can scarcely be perceived, it carries it off to its young, or its retreat. It also breaks and sucks the eggs, and sometimes kills the hen that attempts to defend them. It is remarkably active; and, in a confined place, scarcely any ani-

* Buffon, vol. xv. p. 37.

mal can escape it. It will run up the sides of walls with such facility, that no place is secure from it; and its body is so small, that there is scarcely any hole but what it can wind through. During the summer, its excursions are more extensive; but in winter it chiefly confines itself in barns and farm-yards, where it remains till spring, and where it brings forth its young. All this season it makes war upon the rats and mice, with still greater success than the cat; for being more active and slender, it pursues them into their holes, and, after a short resistance, destroys them. It creeps also into pigeon-holes, destroys the young, catches sparrows, and all kind of small birds; and, if it has brought forth its young, hunts with still greater boldness and avidity. In summer, it ventures farther from the house; and particularly goes into those places where the rat, its chiefest prey, goes before it. Accordingly, it is found in the lower grounds, by the side of waters, near mills, and often is seen to hide its young in the hollow of a tree.

The female takes every precaution to make an easy bed for her little ones: she lines the bottom of her hole with grass, hay, leaves, and moss, and generally brings forth from three to five at a time. All animals of this, as well as those of the dog kind, bring forth their young with closed eyes; but they very soon acquire strength sufficient to follow the dam in her excursions, and assist in her projects of petty rapine. The weasel, like all others of its kind, does not run on equably, but moves by bounding; and when it climbs a tree, by a single spring it gets a good way from the ground. It jumps in the same manner upon its prey; and, having an

extremely limber body, evades the attempts of much stronger animals to seize it.

This animal, like all of its kind, has a very strong smell; and that of the weasel is peculiarly fœtid. This scent is very distinguishable in those creatures, when they void their excrement; for the glands which furnish this fœtid substance, which is of the consistence of suet, open directly into the orifice of the anus, and taint the excrement with the strong effluvia. The weasel smells more strongly in summer than in winter; and more abominably when irritated or pursued, than when at its ease. It always preys in silence, and never has a cry except when struck, and then it has a rough kind of squeaking, which at once expresses resentment and pain. Its appetite for animal food never forsakes it; and it seems even to take a pleasure in the vicinity of putrefaction. M. Buffon tells us of one of them being found, with three young ones, in the carcase of a wolf that was grown putrid, and that had been hung up by the hind legs, as a terror to others. Into this horrid retreat the weasel thought proper to retire to bring forth her young; she had furnished the cavity with hay, grass, and leaves; and the young were just brought forth when they were discovered by a peasant passing that way.

[M. De Buffon, in his seventh supplementary volume, corrects the assertion that the weasel is perfectly untameable; and from a letter of Mademoiselle de Laistre, one of his correspondents, shows that it may be made as familiar as a cat or a lap dog. It frequently eat from her hand, and seemed fonder of milk and meat quite fresh, than of any other food. "If I present my hands, says this

lady, at the distance of three feet, it jumps into them without ever missing. It shews a great deal of address and cunning in order to accomplish its ends, and seems to disobey certain prohibitions merely through caprice. During all its actions, it seemed solicitous to divert, and to be noticed; looking at every jump and at every turn, to see whether it was observed or not. If no notice be taken of its gambols, it ceases them immediately, and betakes itself to sleep; and even when awaked from the soundest sleep, it instantly resumes its gaiety, and frolics about in as sprightly a manner as before. It never shews any ill humour, unless when confined or teased too much; in which case, it expresses its displeasure by a sort of murmur, very different from that which it uttered when pleased.

In the midst of twenty people, this little animal distinguishes my voice, seeks me out, and springs over every body to come at me. His play with me is the most lively and caressing; with his two little paws he pats me on the chin, with an air and manner expressive of delight. This, and a thousand other preferences, shew that his attachment to me is real. When he sees me dressed for going out, he will not leave me, and it is not without some trouble that I can disengage myself from him; he then hides himself behind a cabinet near the door, and jumps upon me as I pass, with so much celerity, that I can often scarcely perceive him.

In vivacity, agility, voice, and manner of murmuring, he seems to resemble a squirrel. During the summer he squeaks and runs about all night long; but since the commencement of the cold

weather, I have not observed this. Sometimes when the sun shines while he is playing on the bed, he turns and tumbles about, and murmurs for a while.

From his delight in drinking milk out of my hand, into which I pour a very little at a time, and his custom of his sipping the little drops and edges of the fluid, it seems probable that he drinks dew in the same manner. He very seldom drinks water, and then only for want of milk, and with great caution; seeming only to refresh his tongue once or twice, and to be even afraid of that fluid. During the hot weather, it rained a good deal. I presented to him some rain water in a dish, and endeavoured to make him go into it, but could not succeed. I then wetted a piece of linen cloth in it, and put it near him; when he rolled upon it with extreme delight.

One singularity in this charming animal, is his curiosity; it being impossible to open a drawer or a box, or even to look at a paper, but he will examine it also. If he gets into any place where I am afraid to permit him to stay, I take a paper or a book and look at it attentively; when he immediately runs upon my hand, and surveys with an inquisitive air whatever I happen to hold. I must further observe, that he plays with a young cat and dog, both of same size, getting about their necks, backs, and paws, without their doing him the least injury."

The Ermine, or Stoat.

NEXT to the weasel in size, and perfectly alike in figure, is the ermine. The difference between this and the former animal is so very small, that many, and among the rest Linnæus, who gives but one description of both, have confounded the two kinds together. However their differences are sufficient to induce later naturalists to suppose the two kinds distinct; and as their lights seem preferable, we chuse to follow their descriptions*.

The stoat or ermine, differs from the weasel in size, being usually nine inches long; whereas the former is not much above six. The tail of the ermine is always tipped with black, and is longer in proportion to the body, and more furnished with hair. The edges of the ears and the ends of the toes in this animal are of a yellowish white; and although it is of the same colour with the weasel, being of a lightish brown; and though both this animal, as well as the weasel, in the most northern parts of Europe, changes its colour in winter, and becomes white; yet even then the weasel may be easily distinguished from the ermine by the tip of the tail, which in the latter is always black.

It is well known that the fur of the ermine is the most valuable of any hitherto known; and it is in winter only that this little animal has it of the proper colour and consistence. In summer, the ermine, as was said before, is brown, and it may at that time more properly be called the stoat. There are few so unacquainted with quadrupeds as not to

* Buffon, British Zoology.

perceive this change of colour in the hair, which in some degree obtains in them all. The horse, the cow, and the goat, all manifestly change colour in the beginning of summer, the old long hair falling off, and a shorter coat of hair appearing in its room, generally of a darker colour, and yet more glossy. What obtains in our temperate climate, is seen to prevail still more strongly in those regions where the winters are long and severe, and the summers short and yet generally hot in an extreme degree. The animal has strength enough, during that season, to throw off a warm coat of fur, which would but incommode it, and continues for two or three months in a state somewhat resembling the ordinary quadrupeds of the milder climates. At the approach of winter, however, the cold increasing, the coat of hair seems to thicken in proportion; from being coarse and short it lengthens and grows finer, while multitudes of smaller hairs grow up between the longer, thicken the coat, and give it all that warmth and softness which are so much valued in the furs of the northern animals.

It is no easy matter to account for this remarkable warmth of the furs of northern quadrupeds, or how they come to be furnished with such an abundant covering. It is easy enough, indeed, to say that Nature fits them thus for the climate; and, like an indulgent mother, when she exposes them to the rigour of an intemperate winter, supplies them with a covering against its inclemency. But this is only flourishing; it is not easy, I say, to tell how Nature comes to furnish them in this manner. A few particulars on this subject are all that we yet know. It is observable among quadrupeds, as well as even

among the human species itself, that a thin sparing diet is apt to produce hair; children that have been ill fed, famished dogs and horses, are more hairy than others whose food has been more plentiful. This may, therefore, be one cause that the animals of the north, in winter, are more hairy than those of the milder climates. At that season, the whole country is covered with deep snow, and the provisions which these creatures are able to procure can be but precarious and scanty. Its becoming finer may also proceed from the severity of the cold, that contracts the pores of the skin, and the hair consequently takes the shape of the aperture through which it grows, as wires are made smaller by being drawn through a smaller orifice. However this may be, all the animals of the arctic climates may be said to have their winter and summer garments, except very far to the north, as in Greenland, where the cold is so continually intense, and the food so scarce, that neither the bears nor foxes change colour*.

The ermine, as was said, is remarkable among these for the softness, the closeness, and the warmth of its fur. It is brown in summer, like the weasel, and changes colour before the winter is begun, becoming a beautiful cream colour, all except the tip of the tail, as was said before, which still continues black. Mr. Daubenton had one of these brought him with its white winter fur, which he put into a cage and kept, in order to observe the manner of moulting its hair. He received it in the beginning of March; in a very short time it began to shed its coat, and a mixture of brown was seen to prevail among the white, so that at the ninth of the

* Krantz's History of Greenland, vol. i. p. 72.

same month its head was nearly become of a reddish brown. Day after day this colour appeared to extend at first along the neck and down the back, in the manner of a stripe of about half an inch broad. The fore-part of the legs then assumed the same colour; a part of the head, the thighs, and the tail, were the last that changed; but at the end of the month there was no white remaining, except on those parts which are always white in this species, particularly the throat and the belly. However, he had not the pleasure of seeing this animal resume its former whiteness, although he kept it for above two years; which, without doubt, was owing to its imprisoned state; this colour being partly owing to its stinted food, and partly to the rigour of the season. During its state of confinement, this little animal always continued very wild and untractable; for ever in a state of violent agitation, except when asleep, which it often continued for three parts of the day. Except for its most disagreeable scent, it was an extremely pretty creature, its eyes sprightly, its physiognomy pleasant, and its motions so swift that the eye could scarcely attend them. It was fed with eggs and flesh, but it always let them putrefy before it touched either. As some of this kind are known to be fond of honey, it was tried to feed this animal with such food for a while; after having for three or four days deprived it of other food, it ate of this, and died shortly after; a strong proof of its being a distinct species from the polecat or the martin, who feed upon honey, but otherwise pretty much resemble the ermine in their figure and dispositions.

In the north of Europe and Siberia, their skins

make a valuable article of commerce, and they are found there much more frequently than among us. In Siberia they burrow in the fields, and are taken in traps baited with flesh. In Norway they are either shot with blunt arrows or taken in traps made of two flat stones, one being propped with a stick, to which is fastened a baited string; and when the animals attempt to pull this away, the stone drops and crushes them to death. This animal is sometimes found white in Great Britain, and is then called a white weasel. Its furs, however, among us are of no value, having neither the thickness, the closeness, nor the whiteness of those which come from Siberia. The fur of the ermine, in every country, changes by time; for, as much of its beautiful whiteness is given it by certain arts known to the furriers, so its natural colour returns, and its former whiteness can never be restored again.

The Ferret.

THE animal next in size to the ermine is the ferret; which is a kind of domestic in Europe, though said to be originally brought from Africa into Spain, which being a country abounding in rabbits, required an animal of this kind, more than any other: however this be, it is not to be found at present among us, except in its domestic state: and it is chiefly kept tame, for the purposes of the warren.

The ferret is about one foot long, being nearly four inches longer than the weasel. It resembles that animal in the slenderness of its body, and the shortness of its legs; but its nose is sharper, and its

body more slender, in proportion to its length. The ferret is commonly of a cream colour; but they are also found of all the colours of the weasel kind; white, blackish, brown, and party-coloured. Those that are of the whitish kind, have their eyes red, as is almost general with all animals entirely of that colour. But its principal distinction from the weasel, is the length of the hair on its tail, which is much longer in the ferret than the weasel. Words will not well express the other distinctions; and what might take up a page in dull discrimination, a single glance of the eye, when the animals themselves are presented, can discover.

As this animal is a native of the torrid zone*, so it cannot bear the rigours of our climate, without care and shelter; and it generally repays the trouble of its keeping, by its great agility in the warren. It is naturally such an enemy of the rabbit kind, that if a dead rabbit be presented to a young ferret, although it has never seen one before, it instantly attacks and bites it with an appearance of rapacity. If the rabbit be living, the ferret is still more eager, seizes it by the neck, winds itself round it, and continues to suck its blood till it be satiated.

Their chief use in warrens, is to enter the holes, and drive the rabbits into the nets that are prepared for them at the mouth. For this purpose, the ferret is muzzled; otherwise, instead of driving out the rabbit, it would content itself with killing and sucking its blood at the bottom of the hole; but by this contrivance, being rendered unable to seize

* Buffon.

its prey, the rabbit escapes from its claws, and instantly makes to the mouth of the hole with such precipitation, that it is inextricably entangled in the net placed there for its reception. It often happens, however, that the ferret disengages itself of its muzzle, and then it is most commonly lost, unless it be dug out; for finding all its wants satisfied in the warren, it never thinks of returning to the owner, but continues to lead a rapacious solitary life while the summer continues, and dies with the cold of the winter. In order to bring the ferret from his hole, the owners often burn straw and other substances at the mouth; they also beat above, to terrify it; but this does not always succeed; for as there are often several issues to each hole, the ferret is affected neither by the noise or the smoke, but continues secure at the bottom, sleeping the greatest part of the time, and waking only to satisfy the calls of hunger.

The female of this species*, is sensibly less than the male, whom she seeks with great ardour, and, it is said, often dies, without being admitted. They are usually kept in boxes, with wool, of which they make themselves a warm bed, that serves to defend them from the rigour of the climate. They sleep almost continually; and the instant they awake, they seem eager for food. They are usually fed with bread and milk. They breed twice a year. Some of them devour their young as soon as brought forth; and then become fit for the male again. Their number is usually from five to six at a litter; and this is said to consist of more females than males. Upon the whole, this is an useful, but

* Buffon.

a disagreeable and offensive animal; its scent is fœtid, its nature voracious, it is tame without any attachment, and such is its appetite for blood, that it has been known to attack and kill children in the cradle. It is very easy to be irritated; and, although at all times its smell is very offensive, it then is much more so; and its bite is very difficult of cure.

To the ferret kind we may add an animal which M. Buffon calls the Vansire, the skin of which was sent him stuffed, from Madagascar. It was thirteen inches long, a good deal resembling the ferret in figure, but differing in the number of its grinding teeth, which amounted to twelve; whereas, in the ferret, there are but eight: it differed also in colour, being of a dark brown, and exactly the same on all parts of its body. Of this animal, so nearly resembling the ferret, we have no other history but the mere description of its figure; and in a quadruped whose kind is so strongly marked, perhaps this is sufficient to satisfy curiosity.

The Polecat.

THE Polecat is larger than the weasel, the ermine, or the ferret, being one foot five inches long; whereas, the weasel is but six inches, the ermine nine, and the ferret eleven inches. It so much resembles the ferret in form, that some have been of opinion they were one and the same animal; nevertheless, there are a sufficient number of distinctions between them: it is, in the first place, larger than the ferret; it is not quite so slender,

and has a blunter nose; it differs also internally, having but fourteen ribs, whereas the ferret has fifteen; and wants one of the breast bones, which is found in the ferret: however, warreners assert, that the polecat will mix with the ferret; and they are sometimes obliged to procure an intercourse between these two animals, to improve the breed of the latter, which, by long confinement, is sometimes seen to abate of its rapacious disposition. M. Buffon denies that the ferret will admit the polecat; yet gives a variety, under the name of both animals, which may very probably be a spurious race between the two.

However this be, the polecat seems by much the more pleasing animal of the two; for although the long slender shape of all these vermin tribes gives them a very disagreeable appearance, yet the softness and colour of the hair in some of them, atones for the defect, and renders them, if not pretty, at least not frightful. The polecat, for the most part, is of a deep chocolate colour; it is white about the mouth; the ears are short, rounded, and tipt with white; a little beyond the corners of the mouth a stripe begins, which runs backward, partly white and partly yellow: its hair, like that of all this class, is of two sorts; the long and the furry: but, in this animal, the two kinds are of different colours; the longest is black, and the shorter yellowish *: the throat, feet and tail, are blacker than any other parts of the body: the claws are white underneath, and brown above; and its tail is about two inches and an half.

* Ray's Synopsis.

De Seve del. Warner sc.

The Pole-cat.

It is very destructive to young game of all kinds *: but the rabbit seems to be its favourite prey; a single polecat is often sufficient to destroy a whole warren; for, with that insatiable thirst for blood which is natural to all the weasel kind, it kills much more than it can devour; and I have seen twenty rabbits at a time taken out dead, which they had destroyed, and that by a wound which was hardly perceptible. Their size, however, which is so much larger than the weasel, renders their retreats near houses much more precarious; although I have seen them burrow near a village, so as scarcely to be extirpated. But in general, they reside in woods or thick brakes, making holes under ground of about two yards deep, commonly ending among the roots of large trees, for greater security. In winter they frequent houses, and make a common practice of robbing the hen-roost and the dairy.

The polecat is particularly destructive among pigeons †, when it gets into a dove-house; without making so much noise as the weasel, it does a great deal more mischief; it dispatches each with a single wound in the head; and, after killing a great number, and satiating itself with their blood, it then begins to think of carrying them home. This it carefully performs, going and returning, and bringing them one by one to its hole; but if it should happen that the opening by which it got into the dove-house, be not large enough for the body of the pigeon to get through, this mischievous creature contents itself with carrying away the

* British Zoology, vol. I. p. 78. † Buffon.

heads, and makes a most delicious feast upon the brains.

It is not less fond of honey, attacking the hives in winter, and forcing the bees away. It does not remove far from houses in winter, as its prey is not so easily found in the woods during that season. The female brings forth her young in summer, to the number of five or six at a time; these she soon trains to her own rapacious habits, supplying the want of milk, which no carnivorous quadruped has in plenty, with the blood of such animals as she happens to seize. The fur of this animal is considered as soft and warm; yet it is in less estimation than some of a much inferior kind, from its offensive smell, which can never be wholly removed, or suppressed. The polecat seems to be an inhabitant of the temperate climates *, scarcely any being found towards the north, and but very few in the warmer latitudes. The species appears to be confined in Europe, from Poland to Italy. It is certain, that these animals are afraid of the cold as they are often seen to come into houses in winter, and as their tracks are never found in the snow, near their retreats. It is probable, also, that they are afraid of heat, as they are but thinly scattered in the southern climates.

* Buffon.

The Martin.

THE Martin is a larger animal than any of the former, being generally eighteen inches long, and the tail ten more. It differs from the polecat, in being about four or five inches longer; its tail also is longer in proportion, and more bushy at the end; its nose is flatter; its cry is sharper and more piercing; its colours are more elegant; and, what still adds to their beauty, its scent, very unlike the former, instead of being offensive, is considered as a most pleasing perfume. The martin, in short, is the most beautiful of all British beasts of prey: its head is small and elegantly formed; its eyes lively; its ears are broad, rounded and open; its back, its sides, and tail, are covered with a fine thick downy fur, with longer hair intermixed; the roots are ash-colour, the middle of a bright chesnut, the points black; the head is brown, with a slight cast of red; the legs, and upper sides of the feet, are of a chocolate colour; the palms, or under sides, are covered with a thick down, like that of the body; the feet are broad, the claws white, large and sharp, well adapted for the purposes of climbing, but, as in others of the weasel kind, incapable of being sheathed or unsheathed at pleasure; the throat and breast are white; the belly of the same colour with the back, but rather paler; the hair on the tail is very long, especially at the end, where it appears much thicker than near the insertion.

There is also a variety of this animal, called the yellow-breasted martin, which in no respect differs

from the former, except that this has a yellow breast, whereas the other has a white one: the colour of the body also is darker; and, as it lives more among trees than the other martin, its fur is more valuable, beautiful and glossy. The former of these M. Buffon calls the Fouine; the latter, simply the Martin; and he supposes them to be a distinct species: but as they differ only in colour, it is unnecessary to embarrass history by a new distinction, where there is only so minute a difference.

Of all animals of the weasel kind, the martin is the most pleasing; all its motions shew great grace, as well as agility; and there is scarcely an animal in our woods that will venture to oppose it. Quadrupeds five times as big are easily vanquished; the hare, the sheep, and even the wild cat itself, though much stronger, is not a match for the martin: and although carnivorous animals are not fond of engaging each other, yet the wild cat and the martin seldom meet without a combat. Gesner tells us of one of this kind that he kept tame, which was extremely playful and pretty; it went among the houses of the neighbourhood, and always returned home when hungry: it was extremely fond of a dog that had been bred up with it, and used to play with it as cats are seen to play, lying on its back, and biting without anger or injury. That which was kept tame by M. Buffon was not quite so social: it was divested of its ferocity, but continued without attachment; and was still so wild as to be obliged to be held by a chain. Whenever a cat appeared, it prepared for war; and if any of the poultry came within its reach, it flew upon

them with avidity. Though it was tied by the middle of the body, it frequently escaped: at first it returned after some hours, but without seeming pleased, and as if it only came to be fed; the next time it continued abroad longer; and, at last, went away without ever returning. It was a female, and was, when it went off, a year and an half old; and M. Buffon supposes it to have gone in quest of the male. It ate every thing that was given it, except sallad or herbs; and it was remarkably fond of honey. It was remarked that it drank often, and often slept for two days together; and that, in like manner, it was often two or three days without sleeping. Before it went to sleep, it drew itself up into a round, hid its head, and covered it with its tail. When awake it was in continual agitation, and was obliged to be tied up, not less to prevent its attacking the poultry, than to hinder it from breaking whatever it came near, by the capricious wildness of its motions.

The yellow-breasted martin is much more common in France than in England; and yet even there this variety is much scarcer than that with the white breast. The latter keeps nearer houses and villages, to make its petty ravages among the sheep and the poultry; the other keeps in the woods, and leads in every respect a savage life, building its nest on the tops of trees, and living upon such animals as are entirely wild like itself. About night-fall it usually quits its solitude to seek its prey, hunts after squirrels, rats, and rabbits; destroys great numbers of birds and their young, takes the eggs from the nest, and often removes them to its

own without breaking*. The instant the martin finds itself pursued by dogs, for which purpose there is a peculiar breed, that seem fit for this chace only, it immediately makes to its retreat, which is generally in the hollow of some tree, towards the top, and which it is impossible to come at without cutting it down. Their nest is generally the original tenement of the squirrel, which that little animal bestowed great pains in completing: but the martin having killed and dispossessed the little architect, takes possession of it for its own use, enlarges its dimensions, improves the softness of the bed, and in that retreat brings forth its young. Its litter is never above three or four at a time; they are brought forth with the eyes closed, as in all the rest of this kind, and very soon come to a state of perfection. The dam compensates for her own deficiency of milk, by bringing them eggs and live birds, accustoming them from the beginning to a life of carnage and rapine. When she leads them from the nest into the woods, the birds at once distinguish their enemies, and attend them, as we before observed of the fox, with all the marks of alarm and animosity. Wherever the martin conducts her young, a flock of small birds are seen threatening and insulting her, alarming every thicket, and often directing the hunter in his pursuit.

The martin is more common in North-America than in any part of Europe. These animals are found in all the northern parts of the world, from Siberia to China and Canada. In every country

* Brooke's Natural History.

they are hunted for their furs, which are very valuable, and chiefly so when taken in the beginning of winter. The most esteemed part of the martin's skin is that part of it which is browner than the rest, and stretches along the back-bone. Above twelve thousand of these skins are annually imported into England from Hudson's Bay, and above thirty thousand from Canada.

The Sable.

Most of the classes of the weasel kind would have continued utterly unknown and disregarded were it not for their furs, which are finer, more glossy and soft, than those of any other quadruped. Their dispositions are fierce and untameable; their scent generally offensive; and their figure disproportioned and unpleasing. The knowledge of one or two of them would, therefore, have sufficed curiosity; and the rest would probably have been confounded together, under one common name, as things useless and uninteresting, had not their skins been coveted by the vain, and considered as capable of adding to human magnificence or beauty.

Of all these, however, the skin of the sable is the most coveted, and held in the highest esteem. It is of a brownish black, and the darker it is, it becomes the more valuable. A single skin, though not above four inches broad, is often valued at ten or fifteen pounds*; the fur differing from others in this, that it has no grain; so that, rub it which way

* Regnard.

you will, it is equally smooth and unresisting. Nevertheless, though this little animal's robe was so much coveted by the great, its history till of late was but very little known; and we are obliged to Mr. Jonelin for the first accurate description of its form and nature *. From him we learn that the sable resembles the martin in form and size, and the weasel in the number of its teeth; for it is to be observed, that whereas the martin has thirty-eight teeth, the weasel has but thirty-four; in this respect, therefore, the sable seems to make the shade between these two animals; being shaped like the one, and furnished with teeth like the other. It is also furnished with very large whiskers about the mouth; its feet are broad, and, as in the rest of its kind, furnished with five claws on each foot. These are its constant marks; but its fur, for which it is so much valued, is not always the same. Some of this species are of a dark brown over all the body, except the ears and the throat, where the hair is rather yellow; others are more of a yellowish tincture, their ears and throat being also much paler. These in both are the colours they have in winter, and which they are seen to change in the beginning of the spring; the former becoming of a yellow brown, the latter of a pale yellow. In other respects they resemble their kind, in vivacity, agility, and inquietude; in sleeping by day and seeking their prey by night; in living upon smaller animals, and in the disagreeable odour that chiefly characterizes their race.

They generally inhabit along the banks of rivers, in shady places, and in the thickest woods. They

* Buffon, vol. xxvii. p. 113.

leap with great ease from tree to tree, and are said to be afraid of the sun, which tarnishes the lustre of their robes. They are chiefly hunted in winter for their skins, during which part of the year they are only in season. They are mostly found in Siberia, and but very few in any other country of the world; and this scarcity it is which enhances their value. The hunting of the sable chiefly falls to the lot of the condemned criminals, who are sent from Russia into these wild and extensive forests that, for a great part of the year, are covered with snow; and in this instance, as in many others, the luxuries and ornaments of the vain, are wrought out of the dangers and the miseries of the wretched. These are obliged to furnish a certain number of skins every year, and are punished if the proper quantity be not provided.

The sable is also killed by the Russian soldiers, who are sent into those parts to that end. They are taxed a certain number of skins yearly, like the former, and are obliged to shoot with only a single ball, to avoid spoiling the skin, or else with cross-bows and blunt arrows. As an encouragement to the hunters, they are allowed to share among themselves the surplus of those skins which they thus procure; and this, in the process of six or seven years, amounts to a very considerable sum. A colonel, during his seven years stay, gains about four thousand crowns for his share, and the common men six or seven hundred each for theirs.

The Ichneumon.

The Ichneumon, which some have injudiciously denominated the Cat of Pharaoh, is one of the boldest and most useful animals of all the weasel kind. In the kingdom of Egypt, where it is chiefly bred, it is used for the same purposes that cats are in Europe, and is even more serviceable, as being more expert in catching mice than they. This animal is usually of the size of the martin, and greatly resembles it in appearance, except that the hair, which is of a grisly black, is much rougher and less downy. The tail also is not so bushy at the end; and each hair in particular has three or four colours, which are seen in different dispositions of its body. Under its rougher hairs, there is a softer fur of a brownish colour, the rough hair being about two inches long, but that of the muzzle extremely short, as likewise that on the legs and paws. However, being long since brought into a domestic state, there are many varieties in this animal; some being much larger than the martin, others much less; some being of a lighter mixture of colours, and some being streaked in the manner of a cat.

The Ichneumon, with all the strength of a cat, has more instinct and agility; a more universal appetite for carnage, and a greater variety of powers to procure it*. Rats, mice, birds, serpents, lizards and insects, are all equally pursued; it attacks every living thing which it is able to over-

* The rest of this description is extracted from M. Buffon, except where marked with commas.

come, and indiscriminately preys on flesh of all kinds. Its courage is equal to the vehemence of its appetite. It fears neither the force of the dog nor the insidious malice of the cat; neither the claws of the vulture nor the poison of the viper. It makes war upon all kinds of serpents with great avidity, seizes and kills them how venomous soever they be; and we are told that when it begins to perceive the effects of their rage, it has recourse to a certain root, which the Indians call after its name, and assert to be an antidote for the bite of the asp or the viper.

But what this animal is particularly serviceable to the Egyptians for is, that it discovers and destroys the eggs of the crocodile. It also kills the young ones that have not as yet been able to reach the water; and, as fable usually goes hand in hand with truth, it is said that the ichneumon sometimes enters the mouth of the crocodile, when it is found sleeping on the shore, boldly attacks the enemy in the inside, and at length, when it has effectually destroyed it, eats its way out again.

The ichneumon when wild generally resides along the banks of rivers; and in times of inundation makes to the higher ground, often approaching inhabited places in quest of prey. It goes forward silently and cautiously, changing its manner of moving according to its necessities. Sometimes it carries the head high, shortens its body, and raises itself upon its legs; sometimes it lengthens itself, and seems to creep along the ground; it is often observed to sit upon its hinds legs, like a dog when taught to beg; but more commonly it is seen to dart like an arrow upon its prey, and seize it with

inevitable certainty. Its eyes are sprightly and full of fire, its physiognomy sensible, its body nimble, its tail long, and its hair rough and various. Like all of its kind, it has glands that open behind, and furnish an odorous substance. Its nose is too sharp and its mouth too small to permit its seizing things that are large; however, it makes up by its courage and activity its want of arms; it easily strangles a cat, though stronger and larger than itself; and often fights with dogs, which, though never so bold, learn to dread the ichneumon as a formidable enemy. It also takes the water like the otter, and, as we are told, will continue under it much longer.

This animal grows fast, and dies soon. It is found in great numbers in all the southern parts of Asia, from Egypt to Java; and it is also found in Africa, particularly at the Cape of Good Hope. It is domestic, as was said, in Egypt; but in our colder climates it is not easy to breed or maintain them, as they are not able to support the rigour of our winters. Nevertheless they take every precaution that instinct can dictate to keep themselves warm; they wrap themselves up into a ball, hiding the head between the legs, and in this manner continue to sleep all day long. "Seba had one sent him from the island of Ceylon, which he permitted to run for some months about the house. It was heavy and slothful by day, and often could not be awaked even with a blow; but it made up this indolence by its nocturnal activity, smelling about without either being wholly tame or wholly mischievous. It climbed up the walls and the trees with very great ease, and appeared extremely fond

of spiders and worms, which it preferred probably from their resemblance to serpents, its most natural food. It was also particularly eager to scratch up holes in the ground; and this, added to its wildness and uncleanliness, obliged our naturalist to smother it in spirits, in order to preserve, and add it to the rest of his collection."

This animal was one of those formerly worshipped by the Egyptians, who considered every thing that was serviceable to them as an emanation of the Deity, and worshipped such as the best representatives of God below. Indeed, if we consider the number of eggs which the crocodile lays in the sand at a time, which often amount to three or four hundred, we have reason to admire this little animal's usefulness as well as industry in destroying them, since otherwise the crocodile might be produced in sufficient numbers to over-run the whole earth *.

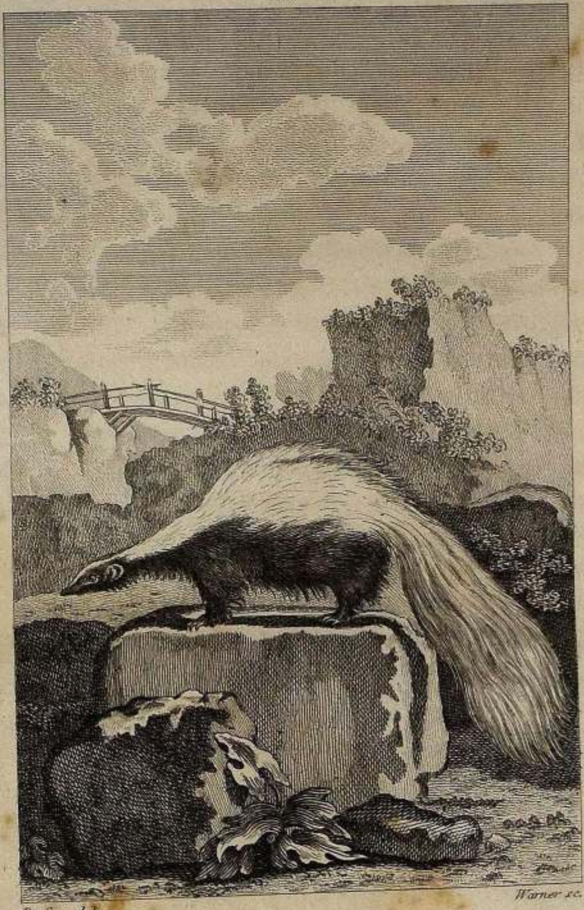
[* M. D'Osbonville, in his essays on the nature of various foreign animals, says, " I had an Ichneumon very young, which I brought up. I fed it at first with milk, and afterwards with baked meat mixed with rice. It soon became even tamer than a cat; for it came when called, and followed me, though at liberty, in the country.

One day I brought him a small water-serpent alive, being desirous to know how far his instinct would carry him against a being, with which he was as yet totally unacquainted. His first emotion seemed to be astonishment mixed with anger, for his hair became erect; but in an instant after, he slipped behind the reptile, and with a remarkable swiftness and agility leaped upon its head, seized it, and crushed it between his teeth. This essay, and new food, seemed to have awakened in him his innate and destructive vivacity; which till then, had given way to the gentleness he had acquired from his education. I had about my house several curious kinds of fowls, among which he had been brought up, and which, till then, he had suffered to go and come un-

The Stinkards.

This is a name which our sailors give to one or two animals of the weasel kind, which are chiefly found in America. All the weasel kind, as was already observed, have a very strong smell; some of them indeed approaching to a perfume, but the greatest number most insupportably fœtid. But the smell of our weasels, and ermines, and polecats, is fragrance itself when compared to that of the *squash* and the *skink*, which have been called the polecats of America. These two are found in different parts of America, both differing in colour and fur, but both obviously of the weasel kind, as appears not only from their figure and odour, but also from their disposition. The *squash* is about the size of a polecat, its hair of a deep brown, but principally differing from all of this kind, in having only four toes on the feet before, whereas all other weasels have five. The *skink*, which I take to be Catesby's Virginia polecat, resembles a polecat in shape and size, but particularly differs in the length of its hair and colour. The hair is above three inches and an half long, and that at the end of the tail above four inches. The colour is partly black and partly white, disposed in stripes over the body, very glossy, long, and beautiful. There seem to be two varieties more of this animal, which M. Buffon calls the Conepate and the Zorille. He supposes each to be a distinct species: but as they are both said to resemble the polecat in form, and both to

molested and unregarded; but a few days after, when he found himself alone, he strangled them every one, ate a little, and as it appeared, drank the blood of two."]



The Squash.

be clothed with long fur of a black and white colour, it seems needless to make a distinction. The conepate resembles the skink in all things except in size, being smaller, and in the disposition of its colours, which are more exact, having five white stripes upon a black ground, running longitudinally from the head to the tail. The zorille resembles the skink, but is rather smaller and more beautifully coloured, its streaks of black and white being more distinct, and the colours of its tail being black at its insertion, and white at the extremity; whereas in the skink they are all of one grey colour.

But whatever differences there may be in the figure or colour of these little animals, they all agree in one common affection, that of being intolerably fœtid and loathsome. I have already observed, that all the weasel kind have glands furnishing an odorous matter, near the anus, the conduits of which generally have their aperture just at its opening. That substance which is stored up in these receptacles, is in some of this kind, such as in the martin, already mentioned, and also in the genette and the civet, to be described hereafter, a most grateful perfume; but in the weasel, the ermine, the ferret, and the polecat, it is extremely fœtid and offensive. These glands in the animals now under consideration are much larger, and furnish a matter sublimed to a degree of putrescence that is truly amazing. As to the perfumes of musk and civet, we know that a single grain will diffuse itself over a whole house, and continue for months to spread an agreeable odour, without diminution. However, the perfume of the musk or the civet is

nothing, either for strength or duration, to the insupportable odour of these. It is usually voided with their excrement; and if but a single drop happens to touch any part of a man's garment, it is more than probable that he can never wear any part of it more.

In describing the effects produced by the excrement of these animals, we often hear of its raising this diabolical smell by its urine. However, of this I am apt to doubt; and it should seem to me, that, as all the weasel kind have their excrements so extremely fœtid from the cause above mentioned, we may consider these also as being fœtid from the same causes. Besides, they are not furnished with glands to give their urine such a smell; and the analogy between them and the weasel kind being so strong in other respects, we may suppose they resemble each other in this. It has also been said that they take this method of ejecting their excrement to defend themselves against their pursuers; but it is much more probable that this ejection is the convulsive effect of terror, and that it serves as their defence without their own concurrence. Certain it is, that they never smell thus horridly, except when enraged or affrighted, for they are often kept tame about the houses of the planters of America without being very offensive.

The habitudes of all these animals are the same, living like all the rest of the weasel kind, as they prey upon smaller animals and birds eggs. The squash, for instance, burrows like the polecat in the clefts of rocks, where it brings forth its young. It often steals into farm-yards, and kills the poultry, eating only their brains. Nor is it safe

to pursue or offend it, for then it calls up all its scents, which are its most powerful protection. At that time neither men nor dogs will offer to approach it; the scent is so strong, that it reaches for half a mile round, and more near at hand is almost stifling. If the dogs continue to pursue, it does all in its power to escape, by getting up a tree, or by some such means; but if driven to an extremity, it then lets fly upon the hunters; and if it should happen that a drop of this fœtid discharge fall in the eye, the person runs the risque of being blinded for ever*.

The dogs themselves instantly abate of their ardour, when they find this extraordinary battery played off against them; they instantly turn tail, and leave the animal undisputed master of the field; and no exhortations can ever bring them to rally. "In the year 1749," says Kalm, "one of these animals came near the farm where I lived. It was in winter time, during the night; and the dogs that were upon the watch pursued it for some time, until it discharged against them. Although I was in my bed a good way off, I thought I should have been suffocated; and the cows and oxen, by their lowings, shewed how much they were affected by the stench. About the end of the same year, another of these animals crept into our cellar, but did not exhale the smallest scent, because it was not disturbed. A foolish woman, however, who perceived it at night, by the shining of its eyes, killed it, and at that moment its stench began to spread. The whole cellar was filled with it to such a degree, that the woman kept her bed for several days after;

* Voyage de Kalm, as quoted by Buffon, vol. xxvii. p. 93.

and all the bread, meat, and other provisions, that were kept there, were so infected, that they were obliged to be thrown out of doors." Nevertheless, many of the planters, and the native Americans, keep this animal tame about their houses; and seldom perceive any disagreeable scents, except it is injured or frighted. They are also known to eat its flesh, which some assert to be tolerable food; however, they take care to deprive it of those glands which are so horridly offensive.

The Genette.

FROM the squash, which is the most offensive animal in nature, we come to the Genette, which is one of the most beautiful and pleasing. Instead of the horrid stench with which the former affects us, this has a most grateful odour; more faint than civet, but to some, for that reason, more agreeable. This animal is rather less than the martin; though there are genettes of different sizes; and I have seen one rather larger. It also differs somewhat in the form of its body. It is not easy, in words, to give an idea of the distinction. It resembles all those of the weasel kind, in its length, compared to its height; it resembles them in having a soft beautiful fur, in having its feet armed with claws that cannot be sheathed, and in its appetite for petty carnage. But then it differs from them in having the nose much smaller and longer, rather resembling that of a fox than a weasel. The tail also, instead of being bushy, tapers to a point, and is much longer; its ears are larger, and its

paws smaller. As to its colours, and figure in general, the genette is spotted with black, upon a ground mixed with red and grey. It has two sorts of hair, the one shorter and softer, the other longer and stronger, but not above half an inch long on any part of its body, except the tail. Its spots are distinct and separate upon the sides, but unite towards the back, and form black stripes, which run longitudinally from the neck backwards. It has also along the back a kind of mane or longish hair, which forms a black streak from the head to the tail, which last is marked with rings, alternately black and white, its whole length.

The genette, like all the rest of the weasel kinds, has glands, that separate a kind of perfume, resembling civet, but which soon flies off. These glands open differently from those of other animals of this kind; for, as the latter have their apertures just at the opening of the anus, these have their aperture immediately under it; so that the male seems, for this reason, to the superficial observer to be of two sexes.

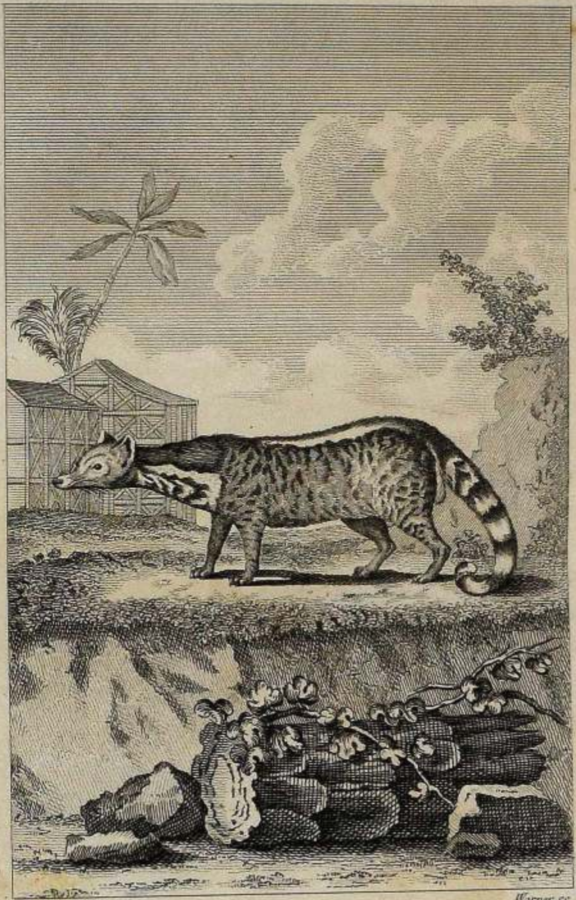
It resembles the martin very much in its habits and disposition*; except, that it seems tamed much more easily. Belonius assures us, that he has seen them in the houses at Constantinople as tame as cats; and that they were permitted to run every where about, without doing the least mischief. For this reason they have been called the Cats of Constantinople; although they have little else in common with that animal, except their skill in spying out and destroying vermin. Naturalists pretend that it inhabits only the moister

* Buffon, vol. xix. p. 187.

grounds, and chiefly resides along the banks of rivers, having never been found in mountains, nor dry places. The species is not much diffused; it is not to be found in any part of Europe, except Spain and Turky; it requires a warm climate to subsist and multiply in; and yet it is not to be found in the warmer regions either of India or Africa. From such as have seen its uses at Constantinople, I learn, that it is one of the most beautiful, cleanly, and industrious animals in the world; that it keeps whatever house it is in perfectly free from mice and rats, which cannot endure its smell. Add to this, its nature is mild and gentle, its colour various and glossy, its fur valuable; and, upon the whole, it seems to be one of those animals that, with proper care, might be propagated among us, and might become one of the most serviceable of our domestics.

The Civet.

PROCEEDING from the smaller to the greater of this kind, we come, in the last place, to the Civet, which is much larger than any of the former; for as the martin is not above sixteen inches long, the civet is found to be above thirty. M. Buffon distinguishes this species into two kinds; one of which he calls the Civet, and the other the Zibet. The latter principally differs from the former in having the body longer and more slender, the nose smaller, the ears longer and broader; no mane or long hair running down the back in the latter; and the tail longer, and better marked with rings of



De Seve del. Warner sc.

The Civet

different colours, from one end to the other. These are the differences which have induced this great naturalist to suppose them animals of distinct species; and to allot each a separate description. How far future experience may confirm this conjecture, time must discover; but certain it is, that if such small varieties make a separate species, there may be many other animals equally entitled to peculiar distinction that now are classed together. We shall, therefore, content ourselves, at present, with considering, as former naturalists have done, these two merely as varieties of the same animal, and only altered in figure, by climate, food, or education.

The civet resembles animals of the weasel kind in the long slenderness of its body, the shortness of its legs, the odorous matter that exudes from the glands behind, the softness of its fur, the number of its claws, and their incapacity of being sheathed. It differs from them in being much larger than any hitherto described: in having the nose lengthened, so as to resemble that of the fox; the tail long, and tapering to a point: and its ears straight, like those of a cat. The colour of the civet varies: it is commonly ash, spotted with black; though it is whiter in the female, tending to yellow; and the spots are much larger, like those of a panther. The colour on the belly, and under the throat, is black; whereas the other parts of the body are black or streaked with grey. This animal varies in its colour, being sometimes streaked, as in our kind of cats called Tabbies. It has whiskers, like the rest of its kind; and its eye is black and beautiful.

The opening of the pouch or bag, which is the receptacle of the civet, differs from that of the rest of the weasel kind, not opening into, but under the anus. Beside this opening, which is large, there is still another lower down; but for what purposes designed, is not known. The pouch itself is about two inches and an half broad, and two long; its opening makes a chink, from the top downwards, that is about two inches and an half long; and is covered on the edges, and within, with short hair: when the two sides are drawn asunder, the inward cavity may be seen, large enough to hold a small pullet's egg; all round this are small glands, opening and furnishing that strong perfume which is so well known, and is found, in this pouch, of the colour and consistence of pomatum. Those who make it their business to breed these animals for their perfume, usually take it from them twice or thrice a week, and sometimes oftener. The animal is kept in a long sort of a box, in which it cannot turn round. The person, therefore, opens this box behind, drags the animal backwards by the tail, keeps it in this position by a bar before, and, with a wooden spoon, takes the civet from the pouch as carefully as he can; then lets the tail go, and shuts the box again. The perfume, thus procured, is put into a vessel, which he takes care to keep shut; and when a sufficient quantity is procured, it is sold to very great advantage.

The civet*, although a native of the warmest climates, is yet found to live in temperate, and even cold countries, provided it be defended fully from the injuries of the air. Wherefore, it is not

* Buffon, vol. xix.

only bred among the Turks, the Indians, and Africans, but great numbers of these animals are also bred in Holland, where this scraping people make no small gain of its perfume. The perfume of Amsterdam is reckoned the purest of any; the people of other countries adulterating it with gums, and other matters, which diminish its value, but encrease its weight. The quantity which a single animal affords generally depends upon its health and nourishment. It gives more in proportion as it is more delicately and abundantly fed. Raw flesh, hashed small, eggs, rice, birds, young fowls, and particularly fish, are the kinds of food the civet most delights in. These are to be changed and altered, to suit and entice its appetite, and continue its health. It gets but very little water; and although it drinks but rarely, yet it makes urine very frequently; and, upon such occasions, we cannot, as in other animals, distinguish the male from the female.

The perfume of the civet is so strong that it communicates itself to all parts of the animal's body; the fur is impregnated thereby, and the skin penetrated to such a degree, that it continues to preserve the odour for a long time after it is stript off. If a person be shut up with one of them in a close room, he cannot support the perfume, which is so copiously diffused. When the animal is irritated, as in all the weasel kind, its scent is much more violent than ordinary; and if it be tormented so as to make it sweat, this also is a strong perfume, and serves to adulterate or encrease what is otherwise obtained from it. In general, it is sold in Holland for about fifty shillings an ounce; though, like all

other commodities, its value alters in proportion to the demand. Civet must be chosen new, of a good consistence, a whitish colour, and a strong, disagreeable smell. There is still a very considerable traffic carried on from Busserah, Calicut, and other places in India, where the animal that produces it is bred; from the Levant also, from Guinea, and especially from Brasil, in South America, although M. Buffon is of opinion that the animal is a native only of the Old Continent, and not to be found wild in the New. The best civet, however, is furnished, as was observed, by the Dutch, though not in such quantities at present as some years past, when this perfume was more in fashion. Civet is a much more grateful perfume than musk, to which it has some resemblance; and was some years ago used for the same purposes in medicine. But, at present, it is quite discontinued in prescription; and persons of taste or elegance seem to proscribe it even from the toilet. Perfumes, like dress, have their vicissitudes; musk was in peculiar repute, until displaced by civet; both gave ground, upon discovering the manner of preparing ambergrise; and even this is now disused for the less powerful vegetable kinds of fragrance, spirit of lavender, or ottar of roses.

As to the rest, the civet is said to be a wild fierce animal; and, although sometimes tamed, is never thoroughly familiar. Its teeth are strong and cutting, although its claws be feeble and flexible. It is light and active, and lives by prey, as the rest of its kind, pursuing birds, and other small animals that it is able to overcome. They are sometimes seen stealing into the yards and outhouses,

De Seve del. Warner sc.

The Glutton.

to seize upon the poultry: their eyes shine in the night, and it is very probable that they see better in the dark than by day. When they fail of animal food, they are found to subsist upon roots and fruits, and very seldom drink; for which reason they are never found near great waters. They breed very fast in their native climates, where the heat seems to conduce to their propagation; but in our temperate latitudes, although they furnish their perfume in great quantities, yet they are not found to multiply.—A proof that their perfume has no analogy with their appetite for generation*.

The Glutton.

I WILL add but one animal more to this numerous class of the weasel kind; namely, the Glutton; which, for several reasons, seems to belong to this tribe, and this only. We have hitherto had no precise description of this quadruped; some resembling it to a badger, some to a fox, and some to an hyæna. Linnæus places it among the weasels, from the similitude of its teeth; it should seem to me to resemble this animal still more, from the great length of its body, and the shortness of

[* This animal is now ascertained to be a species of bear. It is about three feet long, besides the tail, which is a foot in length. Its size is equal to that of the common fox, though like others of its tribe; it is of a more clumsy make, and its back is more convex. Its general colour is a blackish-brown, with the sides paler. The variety called the Wolverene is distinguished by its superior size, in the colour of its body, which is dull ferruginous, with the front, throat, and longitudinal stripe on the body whitish.]

its legs, from the softness of its fur, its disagreeable scent, and its insatiable appetite for animal food. Mr. Klein, who saw one of them which was brought alive from Siberia, assures us, that it was about three feet long*, and about a foot and an half high. If we compare these dimensions with those of other animals, we shall find that they approach more nearly to the class we are at present describing than any other; and that the glutton may very justly be conceived under the form of a great overgrown weasel. Its nose, its ears, its teeth, and its long bushy tail, are entirely similar; and as to what is said of its being rather corpulent than slender, it is most probable that those who described it thus saw it after eating, at which time its belly we are assured is most monstrously distended: however, suspending all certainty upon this subject, I will take leave rather to follow Linnæus than Buffon in describing this animal; and leave future experience to judge between them.

The Glutton, which is so called from its voracious appetite, is an animal found as well in the north of Europe and Siberia, as in the north parts of America, where it has the name of the Carcajou. Amidst the variety of descriptions which have been given of it, no very just idea can be formed of its figure; and indeed some naturalists, among whom was Ray, entirely doubted of its existence. From the best accounts, however, we have of it, the body is thick and long, the legs short; it is black along

* He says it was an ell and eight inches long; I have, therefore, given its length as supposing it to be a Flemish ell, which is twenty-seven inches.

the back, and of a reddish brown on the sides; its fur is held in the highest estimation, for its softness and beautiful gloss; the tail is bushy, like that of the weasel, but rather shorter; and its legs and claws better fitted for climbing trees, than for running along the ground. Thus far it entirely resembles the weasel; and its manner of taking its prey is also by surprize, and not by pursuit.

Scarcely any of the animals with short legs and long bodies pursue their prey; but, knowing their own incapacity to overtake it by swiftness, either creep upon it in its retreats, or wait in ambush, and seize it with a bound. The glutton, from the make of its legs, and the length of its body, must be particularly slow; and, consequently, its only resource is in taking its prey by surprize. All the rest of the weasel kind, from the smallness of their size, are better fitted for a life of insidious rapine than this; they can pursue their prey into its retreats, they can lurk unseen among the branches of trees, and hide themselves with ease under the leaves; but the glutton is too large to follow small prey into their retreats; nor would such, even if obtained, be sufficient to sustain it. For these reasons, therefore, this animal seems naturally compelled to the life for which it has long been remarkable. Its only resource is to climb a tree, which it does with great ease, and there it waits with patience until some large animal passes underneath, upon which it darts down with unerring certainty, and destroys it.

It is chiefly in North America that this voracious creature is seen lurking among the thick branches of trees, in order to surprize the deer, with which the

extensive forests of that part of the world abound. Endued with a degree of patience equal to its rapacity, the glutton singles out such trees as it observes marked by the teeth or the antlers of the deer; and is known to remain there watching for several days together. If it has fixed upon a wrong tree, and finds that the deer have either left that part of the country, or cautiously shun the place, it reluctantly descends, pursues the beaver to its retreat, or even ventures into the water in pursuit of fishes. But if it happens that, by long attention, and keeping close, at last the elk or the rein-deer happens to pass that way, it at once darts down upon them, sticks its claws between their shoulders and remains there unalterably firm. It is in vain that the large frighted animal increases its speed, or threatens with its branching horns; the glutton having taken possession of its post, nothing can drive it off; its enormous prey drives rapidly along amongst the thickest woods, rubs itself against the largest trees, and tears down the branches with its expanded horns; but still its insatiable foe sticks behind, eating its neck, and digging its passage to the great blood-vessels that lie in that part. Travellers who wander through those deserts, often see pieces of the glutton's skin sticking to the trees, against which it was rubbed by the deer. But the animal's voracity is greater than its feelings, and it never seizes without bringing down its prey. When, therefore, the deer, wounded, and feeble with the loss of blood, falls, the glutton is seen to make up for its former abstinence, by its present voracity. As it is not possessed of a feast of this kind every day, it resolves to lay in a store to serve it for a good

while to come. It is indeed amazing how much one of these animals can eat at a time! That which was seen by Mr. Klein, although without exercise or air, although taken from its native climate, and enjoying but an indifferent state of health, was yet seen to eat thirteen pounds of flesh every day, and yet remained unsatisfied. We may, therefore, easily conceive how much more it must devour at once, after a long fast, of a food of its own procuring, and in the climate most natural to its constitution. We are told, accordingly, that from being a lank thin animal, which it naturally is, it then gorges in such quantities, that its belly is distended, and its whole figure seems to alter. Thus voraciously it continues eating, till, incapable of any other animal function, it lies totally torpid by the animal it has killed; and in this situation continues for two or three days. In this loathsome and helpless state it finds its chief protection from its horrid smell, which few animals care to come near *; so that it continues eating and sleeping till its prey be devoured, bones and all; and then it mounts a tree, in quest of another adventure.

The glutton, like many others of the weasel kind, seems to prefer the most putrid flesh to that newly killed; and such is the voraciousness of this hateful creature, that, if its swiftness and strength were equal to its rapacity, it would soon thin the forest of every other living creature. But, fortunately, it is so slow that there is scarcely a quadruped that cannot escape it, except the beaver. This, therefore, it very frequently pursues upon land; but the beaver generally makes good its retreat by taking

* Linnæi Syst. p. 67.

to the water, where the glutton has no chance to succeed. This pursuit only happens in summer; for in the winter all that remains is to attack the beaver's house, as at that time it never stirs from home. This attack, however, seldom succeeds; for the beaver has a covert way bored under the ice, and the glutton has only the trouble and disappointment of sacking an empty town.

A life of necessity generally produces a good fertile invention. The glutton, continually pressed by the call of appetite, and having neither swiftness nor activity to satisfy it, is obliged to make up by stratagem the defects of nature. It is often seen to examine the traps and the snares laid for other animals, in order to anticipate the fowlers. It is said to practise a thousand arts to procure its prey, to steal upon the retreats of the rein-deer, the flesh of which animal it loves in preference to all others; to lie in wait for such animals as have been maimed by the hunters; to pursue the isatis while it is hunting for itself; and, when that animal has run down its prey, to come in and seize upon the whole, and sometimes to devour even its poor provider; when these pursuits fail, even to dig up the graves, and fall upon the bodies interred there, devouring them, bones and all. For these reasons, the natives of the countries where the glutton inhabits, hold it in utter detestation, and usually term it the vulture of quadrupeds. And yet it is extraordinary enough, that, being so very obnoxious to man, it does not seem to fear him*. We are told by Gmelin of one of these coming up boldly and calmly where there were several persons at work, without testifying the

* Buffon.

smallest apprehension, or attemping to run until it had received several blows, that at last totally disabled it. In all probability it came among them seeking its prey; and, having been used to attack animals of inferior strength, it had no idea of a force superior to its own. The glutton, like all the rest of its kind, is a solitary animal; and is never seen in company except with its female, with which it couples in the midst of winter. The latter goes with young about four months, and brings forth two or three at a time *. They burrow in holes as the weasel; and the male and female are generally found together, both equally resolute in defence of their young. Upon this occasion the boldest dogs are afraid to approach them; they fight obstinately, and bite most cruelly. However, as they are unable to escape by flight, the hunters come to the assistance of the dogs, and easily overpower them. Their flesh, it may readily be supposed, is not fit to be eaten; but the skins amply recompense the hunters for their toil and danger. The fur has the most beautiful lustre that can be imagined, and is preferred before all others, except that of the Siberian fox, or the sable. Among other peculiarities of this animal, Linnæus informs us, that it is very difficult to be skinned; but from what cause, whether its abominable stench, or the skin's tenacity to the flesh, he has not thought fit to inform us †.

* Linnæi System, p. 67.

[† Besides the kinds here enumerated, some few others have been added by later travellers and naturalists.

M. Sonnerat describes a species which he found in Caffraria, and which he calls the Zenic. It is about the size of a water-rat, of a reddish-grey colour, variegated with ten transverse black bands over the back and sides: the tail which is hardly so long as

CHAP. III.

*Of Animals of the Hare Kind**.

HAVING described in the last chapter a tribe of minute, fierce, rapacious animals, I come now to a race of minute animals, of a more harmless and gentle kind, that, without being enemies to any, are preyed upon by all. As Nature has fitted the former for hostility, so it has entirely formed the latter for evasion; and as the one kind subsist by their courage and activity, so the other find safety from their swiftness and their fears. The Hare is the swiftest animal in the world for the time it continues; and few quadrupeds can overtake even the rabbit when it has but a short way to run. To this class also we may add the squirrel, somewhat resem-

the body, is slender, of a deep ferruginous colour for three-fourths of its length, the remainder being black. It has five toes on each foot. The Surikate or meer-rat, an inhabitant of the Cape and Java, is less than the common rat, of a grey-brown colour, with the tail ferruginous, tipt with black. It has a moveable snout, and only four toes on the feet. It feeds on mice and small animals, and often sits erect like a squirrel; and makes a rattling kind of noise with its tail, when it is pleased.

The honey-weasel, a native of Africa, is about two feet long: its general colour is a blackish ash-colour, with a light grey stripe along the sides: the claws are long and made for burrowing. It lives in holes under ground, and feeds chiefly upon honey, to which it is said to be conducted by a bird called the honey-guide. Its skin is remarkably tough and loose, probably given it as a protection against the stings of the bees.]

[* The animals of this family have two front teeth in each jaw; those in the upper jaw are doubled, having two smaller ones standing behind the others: they feed entirely on vegetables, are very small, and run by a kind of leaping: they have five toes on the fore-feet, and four on the hinder.

bling the hare and rabbit in its form and nature, and equally pretty, inoffensive, and pleasing.

If we were methodically to distinguish animals of the hare kind from all others, we might say that they have but two cutting teeth above and two below, that they are covered with a soft downy fur, and that they have a bushy tail. The combination of these marks might perhaps distinguish them tolerably well; whether from the rat, the beaver, the otter, or any other most nearly approaching in form. But, as I have declined all method that rather tends to embarrass history than enlighten it, I am contented to class these animals together for no very precise reason, but because I find a general resemblance between them in their natural habits, and in the shape of their heads and body. I call a squirrel an animal of the hare kind, because it is something like a hare. I call the Paca of the same kind, merely because it is more like a rabbit than any other animal I know of. In short, it is fit to erect some particular standard in the imagination of the reader, to refer him to some animal that he knows, in order to direct him in conceiving the figure of such as he does not know. Still however, he should be apprized that his knowledge will be defective without an examination of each particular species; and that saying an animal is of this or that particular kind is but a very trifling part of its history.

Animals of the hare kind, like all others that feed entirely upon vegetables, are inoffensive and timorous. As Nature furnishes them with a most abundant supply, they have not that rapacity after food remarkable in such as are often stinted in their

provision. They are extremely active and amazingly swift, to which they chiefly owe their protection; for being the prey of every voracious animal, they are incessantly pursued. The hare, the rabbit, and the squirrel, are placed by Pyerius, in his Treatise of Ruminating Animals, among the number of those that chew the cud; but how far this may be true I will not pretend to determine. Certain it is that their lips continually move whether sleeping or waking. Nevertheless, they chew their meat very much before they swallow it, and for that reason I should suppose that it does not want a second mastication. All these animals use their fore-paws like hands; they are remarkably salacious, and are furnished by Nature with more ample powers than most others for the business of propagation. They are so very prolific, that were they not thinned by the constant depredations made upon them by most other animals, they would quickly over-run the earth.

Of all these the hare is the largest, the most persecuted, and the most timorous; all its muscles are formed for swiftness; and all its senses seem only given to direct its flight. It has very large prominent eyes, placed backwards in its head, so that it can almost see behind it as it runs. These are never wholly closed; but as the animal is continually upon the watch, it sleeps with them open. The ears are still more remarkable for their size; they are moveable, and capable of being directed to every quarter; so that the smallest sounds are readily received, and the animal's motions directed accordingly. The muscles of the body are very strong, and without fat, so that it may be said to

carry no superfluous burthen of flesh about it; the hinder feet are longer than the fore, which still adds to the rapidity of its motions; and almost all animals that are remarkable for their speed, except the horse, are formed in the same manner.

An animal so well formed for a life of escape, might be supposed to enjoy a state of tolerable security; but as every rapacious creature is its enemy, it but very seldom lives out its natural term. Dogs of all kinds pursue it by instinct, and follow the hare more eagerly than any other animal. The cat and the weasel kinds are continually lying in ambush, and practising all their little arts to seize it; birds of prey are still more dangerous enemies, as against them no swiftness can avail, nor retreat secure; but man, an enemy far more powerful than all, prefers its flesh to that of other animals, and destroys greater numbers than all the rest. Thus pursued and persecuted on every side, the race would long since have been totally extirpated, did it not find a resource in its amazing fertility.

The hare multiplies exceedingly; it is in a state of engendering at a few months old; the females go with young but thirty days, and generally bring forth three or four at a time*. As soon as they have produced their young, they are again ready for conception, and thus do not lose any time in continuing the breed. But they are in another respect fitted in an extraordinary manner for multiplying their kind; for the female, from the conformation of her womb, is often seen to bring forth, and yet to continue pregnant at the same time; or, in other

* Buffon, vol. xiii. p. 12.

words, to have young ones of different ages in her womb together. Other animals never receive the male when pregnant, but bring forth their young at once. But it is frequently different with the hare; the female often, though already impregnated, admitting the male, and thus receiving a second impregnation. The reason of this extraordinary circumstance is, that the womb in these animals is divided in such a manner that it may be considered as a double organ, one side of which may be filled while the other remains empty. Thus these animals may be seen to couple at every period of their pregnancy, and even while they are bringing forth young laying the foundation of another brood.

The young of these animals are brought forth with their eyes open, and the dam suckles them for twenty days, after which they leave her, and seek out for themselves*. From this we observe, that the education these animals receive is but trifling, and the family connexion but of short duration. In the rapacious kinds the dam leads her young forth for months together; teaches them the arts of rapine; and, although she wants milk to supply them, yet keeps them under her care until they are able to hunt for themselves. But a long connexion of this kind would be very unnecessary as well as dangerous to the timid animals we are describing; their food is easily procured; and their associations, instead of protection, would only expose them to their pursuers. They seldom, however, separate far from each other, or from the place where they were produced; but make each a form at some distance, hav-

* Buffon, vol. xiii. p. 12.

ing a predilection rather for the place than each other's society. They feed during the night rather than by day, chusing the most tender blades of grass, and quenching their thirst with the dew. They live also upon roots, leaves, fruits, and corn, and prefer such plants as are furnished with a milky juice. They also strip the bark of trees during the winter, there being scarcely any that they will not feed on, except the lime or the alder. They are particularly fond of birch, pinks, and parsley. When they are kept tame, they are fed with lettuce and other garden herbs; but the flesh of such as are thus brought up is always indifferent.

They sleep or repose in their forms by day, and may be said to live only by night*. It is then that they go forth to feed and couple. They do not pair, however, but in the rutting season, which begins in February; the male pursues and discovers the female by the sagacity of its nose. They are then seen, by moon-light, playing, skipping, and pursuing each other; but the least motion, the slightest breeze, the falling of a leaf, is sufficient to disturb their revels; they instantly fly off, and each takes a separate way. As their limbs are made for running, they easily outstrip all other animals in the beginning; and could they preserve their speed it would be imposible to overtake them; but as they exhaust their strength at their first efforts, and double back to the place they were started from, they are more easily taken than the fox, which is a much slower animal than they. As their hind legs are longer than the fore, they always chuse to run up hill, by which the speed of their pursuers is dimi-

* Buffon, vol. xiii. p. 12.

nished, while theirs remains the same. Their motions are also without any noise, as they have the sole of the foot furnished with hair; and they seem the only animals that have hair on the inside of their mouths.

They seldom live above seven or eight years at the utmost; they come to their full perfection in a year; and this, multiplied by seven, as in other animals, gives the extent of their lives*. It is said, however, that the females live longer than the males: of this M. Buffon makes a doubt; but I am assured that it is so. They pass their lives, in our climate, in solitude and silence; and they seldom are heard to cry, except when they are seized or wounded. Their voice is not so sharp as the note of some other animals, but more nearly approaching that of the squalling of a child. They are not so wild as their dispositions and their habits seem to indicate; but are of a complying nature, and easily susceptible of a kind of education. They are easily tamed. They even become fond and caressing, but they are incapable of attachment to any particular person, and never can be depended upon; for though taken never so young, they regain their native freedom at the first opportunity. As they have a remarkable good ear, and sit upon their hind-legs, and use their fore-paws as hands, they have been taught to beat the drum, to dance to music, and go through the manual exercise.

But their natural instincts for their preservation are much more extraordinary than those artificial tricks that are taught them. They make themselves a form particularly in those places where the colour

* Buffon, vol. xiii. p. 12.

of the grass most resembles that of their skin; it is open to the south in winter, and to the north in summer. The hare, when it hears the hounds at a distance, flies for some time through a natural impulse, without managing its strength, or consulting any other means but speed for its safety. Having attained some hill or rising-ground, and left the dogs so far behind, that it no longer hears their cries, it stops, rears on its hinder legs, and at length looks back to see if it has not lost its pursuers. But these, having once fallen upon the scent, pursue slowly, and with united skill; and the poor animal soon again hears the fatal tidings of their approach. Sometimes, when sore hunted, it will start a fresh hare, and squat in the same form; sometimes it will creep under the door of a sheep-cot, and hide among the sheep; sometimes it will run among them, and no vigilance can drive it from the flock; some will enter holes like the rabbit, which the hunters call going to *vault;* some will go up one side of the hedge, and come down the other; and it has been known, that a hare sorely-hunted has got upon the top of a cut quick-set hedge, and run a good way thereon, by which it has effectually evaded the hounds. It is no unusual thing also for them to betake themselves to furze bushes, and to leap from one to another, by which the dogs are frequently misled. However, the first doubling a hare makes is generally a key to all its future attempts of that kind, the latter being exactly like the former. The young hares tread heavier, and leave a stronger scent, than the old, because their limbs are weaker; and the more this forlorn creature tires, the heavier it treads, and the stronger is the scent it leaves.

A buck, or male hare, is known by its chusing to run upon hard highways, feeding farther from the wood-sides, and making its doublings of a greater compass than the female. The male having made a turn or two about its form, frequently leads the hounds five or six miles on a stretch; but the female keeps close by some covert side, turns, crosses, and winds among the bushes like a rabbit, and seldom runs directly forward. In general, however, both male and female regulate their conduct according to the weather. In a moist day they hold by the highways more than at any other time, because the scent is then strongest upon the grass. If they come to the side of a grove or spring, they forbear to enter, but squat down by the side thereof, until the hounds have overshot them; and then, turning along their former path, make to their old form, from which they vainly hope for protection.

Hares are divided, by the hunters, into mountain and measled hares. The former are more swift, vigorous, and have their flesh better tasted; the latter chiefly frequent the marshes, when hunted keep among low grounds, and their flesh is moist, white, and flabby. When the male and female keep one particular spot, they will not suffer any strange hare to make its form in the same quarter; so that it is usually said, that the more you hunt, the more hares you shall have; for, having killed one hare, others come and take possession of its form. Many of these animals are found to live in woods and thickets; but they are naturally fonder of the open country, and are constrained only by fear to take shelter in places that afford them neither a warm sun, nor an agreeable pasture. They are,

therefore, usually seen stealing out of the edges of the wood, to taste the grass that grows shorter and sweeter in the open fields, than under the shade of the trees; however, they seldom miss of being pursued; and every excursion is a new adventure. They are shot at by poachers; traced by their footsteps in the snow; caught in springs; dogs, birds, and cats are all combined against them; ants, snakes, and adders drive them from their forms, especially in summer; even fleas, from which most other animals are free, persecute this poor creature; and so various are its enemies, that it is seldom permitted to reach even that short term to which it is limited by Nature.

The soil and climate have their influence upon this animal, as well as on most others. In the countries bordering on the north pole, they become white in winter, and are often seen in great troops of four or five hundred, running along the banks of the river Irtish, or the Jenisca, and as white as the snow they tread on. They are caught in toils for the sake of their skins, which on the spot are sold for less than seven shillings an hundred. Their fur is well known to form a considerable article in the hat manufacture; and we accordingly import vast quantities of it from those countries where the hare abounds in such plenty. They are found also entirely black, but these in much less quantity than the former *; and even some have been seen with horns, though these but rarely †. ‡

* Klein Disp. Quadrup. p. 52.

† Johnston de Quad. lib. ii. cap. 2.

[‡ This animal, if it ever existed, is now no longer found. Johnston probably mistook its ears for horns, or confounded it with some other quadruped.

The hares of the hot countries, particularly in Italy, Spain, and Barbary, are smaller than ours: those bred in the Milanese country are said to be the best in Europe*. There is scarcely a country where this animal is not to be found, from the torrid zone to the neighbourhood of the polar circle. The natives of Guinea knock them on the head as they come down to the sides of the rivers to drink. They also surround the place where they are seen in numbers, and clattering a short stick, which every man carries, against that which the person next him carries, they diminish their circle gradually, till the hares are cooped up in the midst. They then all together throw their sticks in among them, and with such deadly force, that they seldom fail of killing great numbers at a time †.

The flesh of this animal has been esteemed as a delicacy among some nations, and is held in detestation by others. The Jews, the ancient Britons, and the Mahometans, all considered it as an unclean animal, and religiously abstained from it. On the contrary, there are scarcely any other people, however barbarous, at present, that do not consider it as the most agreeable food. Fashion seems to preside and govern all the senses; what mankind at one time consider as beautiful, fragrant, or savoury, may at another time, or among another nation, be regarded as deformed, disgustful, or ill tasted. That flesh which the ancient Romans so much admired, as to call it the food of the wise, was, among the Jews and the Druids, thought unfit to be eaten; and even the moderns, who like the Romans con-

* Dictionnaire Raisonnée, Lievre.

† Hist. Gen. des Voyages, tom. iv. p. 171.

sider the flesh of this animal as a delicacy, have very different ideas as to dressing it. With us it is simply served up without much seasoning; but Apicius shews us the manner of dressing an hare in true Roman taste, with parsley, rice, vinegar, cummin seed, and coriander *.

The Rabbit.

The Hare and the Rabbit, though so very nearly resembling each other in form and disposition, are yet distinct kinds, as they refuse to mix with each other. M. Buffon bred up several of both kinds in the same place; but from being at first indifferent they soon became enemies; and their combats were generally continued until one of them was disabled or destroyed. However, though these experiments were not attended with success, I am assured that nothing is more frequent than an animal bred between these two, which, like all other mules, is marked with sterility. Nay, it has been actually known that the rabbit couples with animals of a much more distant nature; and there is at present in the Museum at Brussels, a creature covered with feathers and hair, and said to be bred between a rabbit and an hen.

The fecundity of the rabbit is still greater than that of the hare; and if we should calculate the produce from a single pair, in one year, the number would be amazing. They breed seven times in a year, and bring eight young ones each time. On a supposition, therefore, that this happens regularly,

* Vid. Apicii, &c.

at the end of four years a couple of rabbits shall see a progeny of almost a million and an half. From hence we might justly apprehend being overstocked by their encrease; but, happily for mankind, their enemies are numerous, and their nature inoffensive; so that their destruction bears a near proportion to their fertility.

But although their numbers be diminished by every beast and bird of prey, and still more by man himself, yet there is no danger of their extirpation. The hare is a poor defenceless animal, that has nothing but its swiftness to depend on for safety; its numbers are, therefore, every day decreasing; and in countries that are well peopled, the species are so much kept under, that laws are made for their preservation. Still, however, it is most likely that they will be at last totally destroyed; and, like the wolf or the elk in some countries, be only kept in remembrance. But it is otherwise with the rabbit, its fecundity being greater, and its means of safety more certain. The hare seems to have more various arts and instincts to escape its pursuers, by doubling, squatting, and winding; the rabbit has but one art of defence alone, but in that one finds safety; by making itself a hole, where it continues a great part of the day, and breeds up its young: there it continues secure from the fox, the hound, the kite, and every other enemy.

Nevertheless, though this retreat be safe and convenient, the rabbit does not seem to be naturally fond of keeping there. It loves the sunny field and the open pasture; it seems to be a chilly animal, and dislikes the coldness of its under-ground habita-

tion. It is, therefore, continually out, when it does not fear disturbance; and the female often brings forth her young, at a distance from the warren, in an hole, not above a foot deep at the most. There she suckles them for about a month; covering them over with moss and grass, whenever she goes to pasture, and scratching them up at her return. It has been said, indeed, that this shallow hole without the warren, is made lest the male should attack and destroy her young; but I have seen the male himself attend the young there, lead them out to feed, and conduct them back upon the return of the dam. This external retreat seems a kind of country-house, at a distance from the general habitation; it is usually made near some spot of excellent pasture, or in the midst of a field of sprouting corn. To this both male and female often retire from the warren; lead their young by night to the food which lies so convenient, and, if not disturbed, continue there till they are perfectly grown up. There they find a greater variety of pasture than near the warren, which is generally eaten bare; and enjoy a warmer sun, by covering themselves up in a shallower hole. Whenever they are disturbed, they then forsake their retreat of pleasure, for one of safety; they fly to the warren with their utmost speed; and, if the way be short, there is scarcely any dog, how swift soever, that can overtake them.

But it does not always happen that these animals are possessed of one of these external apartments; they most usually bring forth their young in the warren, but always in a hole, separate from the male. On these occasions, the female digs herself

an hole*, different from the ordinary one, by being more intricate; at the bottom of which she makes a more ample apartment. This done, she pulls off from her belly a good quantity of her hair, with which she makes a kind of bed for her young. During the two first days she never leaves them; and does not stir out but to procure nourishment, which she takes with the utmost dispatch; in this manner suckling her young, for near six weeks, until they are strong, and able to go abroad themselves. During all this time, the male seldom visits their separate apartment; but when they are grown up, so as to come to the mouth of the hole, he then seems to acknowledge them as his offspring, takes them between his paws, smooths their skin, and licks their eyes: all of them, one after the other, have an equal share in his caresses.

In this manner the rabbit, when wild, consults its pleasure and its safety; but those that are bred up tame, do not take the trouble of digging an hole, conscious of being already protected. It has also been observed †, that when people, to make a warren, stock it with tame rabbits, these animals, having been unaccustomed to the art of scraping an hole, continue exposed to the weather, and every other accident, without ever burrowing. Their immediate offspring also are equally regardless of their safety: and it is not till after two or three generations, that these animals begin to find the necessity and convenience of an asylum, and practise an art which they could only learn from nature.

Rabbits of the domestic breed, like all other

* Buffon. † Ibid.

animals that are under the protection of man, are of various colours; white, brown, black, and mouse-colour. The black are the most scarce; the brown, white, and mouse-colour, are in greater plenty. Most of the wild rabbits are of a brown, and it is the colour which prevails among the species; for, in every nest of rabbits, whether the parents be black or white, there are some brown ones found of the number. But, in England, there are many warrens stocked with the mouse-colour kinds, which some say came originally from an island in the river Humber, and which still continue their original colour, after a great number of successive generations. A gentleman *, who bred up tame rabbits for his amusement, gives the following account of their production. I began, says he, by having but one male and female only; the male was entirely white, and the female brown; but, in their posterity, the number of the brown by far exceeded those of any other colour: there were some white, some party-coloured, and some black. It is surprising how much the descendants were obedient and submissive to their common parent; he was easily distinguished from the rest by his superior whiteness; and, however numerous the other males were, this kept them all in subjection. Whenever they quarrelled among each other, either for their females or provisions, as soon as he heard the noise he ran up to them with all dispatch; and, upon his appearance, all was instantly reduced to peace and order. If he caught any of them in the fact, he instantly punished them, as an example

* Mr. Moutier, as quoted by M. Buffon.

to the rest. Another instance of his superiority was, that having accustomed them to come to me with the call of a whistle, the instant this signal was given, I saw him marshalling them up, leading them the foremost, and then suffering them all to file off before him.

The rabbit *, though less than the hare, generally lives longer. As these animals pass the greater part of their lives in their burrow, where they continue at ease and unmolested, they have nothing to prevent the regularity of their health, or the due course of their nourishment. They are, therefore, generally found fatter than the hare; but their flesh is, notwithstanding, much less delicate. That of the old ones, in particular, is hard, tough, and dry; but it is said, that, in warmer countries, they are better tasted. This may very well be, as the rabbit, though so very plenty in Great Britain and Ireland, is, nevertheless, a native of the warmer climates; and has been originally imported into these kingdoms, from Spain. In that country, and in some of the islands in the Mediterranean, we are told, that they once multiplied in such numbers as to prove the greatest nuisance to the natives. They at first demanded military aid to destroy them; but soon after they called in the assistance of ferrets, which originally came from Africa, and these, with much more ease and expedition, contrived to lessen the calamity. In fact, rabbits are found to love a warm climate, and to be incapable of bearing the cold of the north; so that in Sweden they are obliged to be littered in the houses. It is otherwise in all the tropical climates, where they are extremely com-

* Mr. Moutier, as quoted by M. Buffon.

mon, and where they seldom burrow, as with us. The English counties that are most noted for these animals, are Lincolnshire, Norfolk, and Cambridgeshire. They delight in grounds of a sandy soil, which are warmer than those of clay, and which also furnish a softer and finer pasture.

The tame rabbits are larger than the wild ones, from their taking more nourishment, and using less exercise; but their flesh is not so good, being more insipid and softer. In order to improve it, they are chiefly fed upon bran, and are stinted in their water; for, if indulged in too great a plenty of moist food, they are apt, as the feeders express it, to grow rotten. The hair or fur is a very useful commodity, and is employed in England for several purposes, as well when the skin is dressed with it on, as when it is pulled off. The skins, especially the white, are used for lining clothes, and are considered as a cheap imitation of ermine. The skin of the male is usually preferred, as being the most lasting, but it is coarser; that on the belly in either sex, is the best and finest. But the chief use made of rabbit's fur, is in the manufacture of hats; it is always mixed, in certain proportions, with the fur of the beaver; and it is said to give the latter more strength and consistence.

The Syrian rabbit, like all other animals bred in that country, is remarkable for the length of its hair; it falls along the sides in wavy wreaths, and is, in some places, curled at the end, like wool; it is shed once a year in large masses; and it often happens that the rabbit, dragging a part of its robe on the ground, appears as if it had got another leg, or a longer tail. There are no rabbits naturally in Ame-

rica; however, those that have been carried from Europe are found to multiply in the West-India islands in great abundance. In other parts of that continent they have animals that in some measure resemble the rabbits of Europe; and which most European travellers have often called hares or rabbits, as they happened to be large or small. Their giving them even the name will be a sufficient excuse for my placing them among animals of the hare kind; although they may differ in many of the most essential particulars. But before we go to the new continent, we will first examine such as bear even a distant resemblance to the hare kind at home.

[The Varying Hare, an inhabitant of lofty alpine tracts in northern regions, is of a tawney-grey colour, with a short tail, and ears shorter than the head and tipped with black. It never descends into the plains, or mixes with the common Hare: but is frequently observed to migrate in troops of some hundreds, during severe seasons, in search of food among the woody districts.

The Hare, inhabiting all parts of North America, is white on the belly, has the hinder legs longer than the body, and the tail is black above and white beneath.

The Baikal Hare is something larger than the common Hare, and is distinguished by its having the tail black above and white below, and the upper-edges of the ears black.

The Hare, inhabiting the woods of Brasil, is without tail, white underneath, and has a white collar round its neck. Its size is about that of the common hare. That which inhabits the Cape, living

among the rocks, is brown, with reddish legs, with long naked ears, which are rose coloured on the outside: its tail is as long as the head, very bushy, and carried erect.

The Alpine Hare, a native of the Altaic chain of mountains in Siberia, is of a small size, measuring only nine inches in length. They inhabit the rocky and woody parts, burrowing among the rocks, or dwelling in their fissures. The general colour is ferruginous, with brownish feet and rounded ears: they have no tail. This is the only one of its kind that during the summer, makes a provision against the nakedness and severity of the winter. About autumn, troops of them bite off and gather into heaps, sufficient quantities of the best herbage. This they carefully dry in the sun, and after it has been sufficiently exposed, collect into small ricks, which they deposit either in the chasms of rocks or round the trunk of some tree. The way to these stores is well known and eagerly sought after by the sable hunters, as a necessary provision for their horses. There is always a worn path leading to them, and they are easily discovered, even when covered with snow, by their height and form.

The Calling Hare, a native of the south-east parts of Russia, is of a grey-brown colour with the ears edged with white. It measures hardly six inches in length, and its weight in winter seldom exceeds two ounces and a half. It burrows under ground, leaving an entrance of scarcely more than two inches in diameter. Its residence is discovered by its voice, which considering its size, is remarkably powerful, heard to a great distance, and something resembles that of a Quail. But far less than this

is the Minute Hare of Chili; hardly exceeding in size the meadow mouse. In its native country it is much esteemed as a delicate food, and is often domesticated. Its general colour is brown, though it varies by domestication to white or spotted; the nose is long, and the ears are small, hairy, and pointed.]

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*The Squirrel**.

THERE are few readers that are not as well acquainted with the figure of a squirrel as that of the rabbit; but supposing it unknown to any, we might give them some idea of its form, by comparing it to a rabbit, with shorter ears, and a longer tail. The tail, indeed, is alone sufficient to distinguish it from all others, as it is extremely long, beautiful, and bushy, spreading like a fan, and which, when thrown up behind, covers the whole body. This serves the little animal for a double purpose; when erected, it serves, like an umbrella, as a secure protection from the injuries of the heat and cold; and when extended, it is very instrumental in promoting those vast leaps that the squirrel takes from tree to tree; nay, some assert that it answers still

[* This elegant tribe of quadrupeds have two front teeth in each jaw; those in the upper jaw being wedge-shaped, those in the lower pointed: on each side in the upper jaw there are five grinders, and four in the lower: they have perfect collar bones, and in most species the tail is shed on each side. They are extremely active, climbing trees with the most astonishing ease, and springing with great facility and dexterity from one branch to another. Their principal food is nuts, acorns, and beech-mast; and in eating, they sit erect, holding their food between their fore paws.]

De Seve del. *Warner sc.*

The Squirrel

a third purpose, and when the squirrel takes water, which it sometimes does upon a piece of bark, that its tail serves it instead of a sail *.

There are few wild animals in which there are so many varieties as in the squirrel. The *common squirrel* is of the size of a small rabbit, and is rather of a more reddish brown. The belly and breast are white; and the ears beautifully ornamented with long tufts of hair, of a deeper colour than that on the body. The eyes are large, black, and lively; the legs are short and muscular, like those of the rabbit; but the toes longer, and the claws sharper, so as to fit it for climbing. When it eats, or dresses itself, it sits erect, like the hare or rabbit, making use of its fore legs as hands; and chiefly resides in trees. The *grey Virginian squirrel*, which M. Buffon calls the Petit Gris, is larger than a rabbit, and of a greyish colour. Its body and limbs are thicker than those of the common squirrel; and its ears are shorter, and without tufts at the point. The upper part of the body, and external part of the legs, are of a fine whitish grey, with a beautiful red streak on each side lengthways. The tail is covered with very long grey hair, variegated with black and white towards the extremity. This variety seems to be common to both continents; and in Sweden is seen to change colour in winter. The *Barbary squirrel*, of which M. Buffon makes three varieties, is of a mixed colour, between red and black. Along the sides there are white and brown lines, which render this animal very beautiful; but what still adds to its elegance is, that the belly is surrounded with white. Some of these

* Klein. Linnæus.

hold up the tail erect; and others throw it forward over their body. The *Siberian white squirrel* is of the size of a common squirrel. The *Carolina black squirrel* is much bigger than the former, and sometimes tipt with white at all the extremities. The *Brasilian squirrel,* which M. Buffon calls the Coquallin, is a beautiful animal of this kind, and very remarkable for the variety of its colours. Its belly is of a bright yellow; its head and body variegated with white, black, brown, and orange colour. It wants the tufts at the extremity of its ears; and does not climb trees, as most of the kind are seen to do. To this list may be added the *little ground squirrel of Carolina,* of a reddish colour, and blackish stripes on each side; and, like the former, not delighting in trees. Lastly, the *squirrel of New Spain,* which is of a deep iron-grey colour, with seven longitudinal whitish streaks along the sides of the male, and five along those of the female. As for the flying squirrels, they are a distinct kind, and shall be treated of by themselves*.

These, which I suppose to be but a few of the numerous varieties of the squirrel, sufficiently serve

[* In Dr. Shaw's general zoology, twenty three distinct species are enumerated, exclusive of those which have the flying membrane. The largest of these is the great Malabar squirrel, first described by M. Sonnerat. Its colour is ferruginous, yellowish underneath, with the outside of the limbs and tail black. The fore-feet are furnished with four toes, each armed with a crooked claw, and a very small thumb or fifth toe having a small rounded nail: the hind-feet have five toes, each with a strong crooked claw. In size it is equal to a cat: the tail is longer than the body, and when fully expanded, equal in bulk. This animal feeds on fruits, and is peculiarly fond of the milk of the cocoa-nut, which it pierces when ripe, in order to obtain the liquor.]

to shew how extensively this animal is diffused over all parts of the world. It is not to be supposed, however, that every variety is capable of sustaining every climate; for few animals are so tender, or so little able to endure a change of abode, as this. Those bred in the tropical climates, will only live near a warm sun; while, on the contrary, the squirrel of Siberia will scarcely endure the temperature of ours. These varieties do not only differ in their constitutions and colour, but in their dispositions also; for while some live on the tops of trees, others feed, like rabbits, on vegetables below. Whether any of these, so variously coloured, and so differently disposed, would breed among each other, we cannot tell: and since, therefore, we are left in uncertainty upon this point, we are at liberty either to consider each as a distinct species by itself; or only a variety, that accident might have originally produced, and that the climate or soil might have continued. For my own part, as the original character of the squirrel is so strongly marked upon them all, I cannot help considering them in the latter point of view; rather as the common descendants of one parent, than originally formed with such distinct similitudes.

The squirrel is a beautiful little animal *, which is but half savage; and which, from the gentleness and innocence of its manners, deserves our protection. It is neither carnivorous nor hurtful: its usual food is fruits, nuts, and acorns; it is cleanly, nimble, active, and industrious; its eyes are sparkling, and its physiognomy marked with meaning.

* Buffon.

It generally, like the hare and rabbit, sits up on its hinder legs, and uses the fore paws as hands; these have five claws or toes, as they are called, and one of them is separated from the rest like a thumb. This animal seems to approach the nature of birds, from its lightness, and surprising agility on the tops of trees. It seldom descends to the ground, except in case of storms, but jumps from one branch to another; feeds, in spring on the buds, and young shoots; in summer, on the ripening fruits; and particularly the young cones of the pine-tree. In autumn it has an extensive variety to feast upon; the acorn, the filbert, the chesnut, and the wilding. This season of plenty, however, is not spent in idle enjoyment; the provident little animal gathers at that time its provisions for the winter; and cautiously foresees the season when the forest shall be stripped of its leaves and fruitage.

Its nest is generally formed among the large branches of a great tree, where they begin to fork off into small ones. After chusing the place where the timber begins to decay, and an hollow may the more easily be formed, the squirrel begins by making a kind of level between the forks; and then bringing moss, twigs, and dry leaves, it binds them together with great art, so as to resist the most violent storm. This is covered up on all sides; and has but a single opening at top, which is just large enough to admit the little animal; and this opening is itself defended from the weather by a kind of canopy, made in the fashion of a cone, so that it throws off the rain, though never so heavy. The nest thus formed, with a very little opening above, is, nevertheless, very commodious and roomy below;

soft, well knit together, and every way convenient and warm. In this retreat the little animal brings forth its young, shelters itself from the scorching heat of the sun, which it seems to fear, and from the storms and the inclemency of winter, which it is still less capable of supporting. Its provision of nuts and acorns is seldom in its nest, but in the hollows of the tree, laid up carefully together, and never touched but in cases of necessity. Thus one single tree serves for a retreat and a store-house; and without leaving it during the winter, the squirrel possesses all those enjoyments that its nature is capable of receiving. But it sometimes happens that its little mansion is attacked by a deadly and powerful foe. The martin goes often in quest of a retreat for its young, which it is incapable of making for itself; for this reason it fixes upon the nest of a squirrel, and, with double injustice, destroys the tenant, and then takes possession of the mansion.

However, this is a calamity that but seldom happens: and, of all other animals, the squirrel leads the most frolicksome playful life; being surrounded with abundance, and having few enemies to fear. They are in heat early in the spring; when, as a modern naturalist says*, it is very diverting to see the female feigning an escape from the pursuit of two or three males, and to observe the various proofs which they give of their agility, which is then exerted in full force. Nature seems to have been particular in her formation of these animals for propagation; however, they seldom bring forth above four or five young at a time, and that but once a year. The time of their gestation seems

* British Zoology.

to be about six weeks; they are pregnant in the beginning of April, and bring forth about the middle of May.

The squirrel is never found in the open fields, nor yet in copses or underwoods; it always keeps in the midst of the tallest trees, and, as much as possible, shuns the habitations of men. It is extremely watchful; if the tree in which it resides be but touched at the bottom, the squirrel instantly takes the alarm, quits its nest, at once flies off to another tree; and thus travels, with great ease, along the tops of the forest, until it finds itself perfectly out of danger. In this manner it continues for some hours, at a distance from home, until the alarm be past away; and then it returns, by paths that to all quadrupeds but itself are utterly impassable. Its usual way of moving is by bounds; these it takes from one tree to another, at forty feet distance; and if at any time it is obliged to descend, it runs up the side of the next tree with amazing facility. It has an extremely sharp piercing note, which most usually expresses pain; it has another, more like the purring of a cat, which it employs when pleased; at least it appeared so in that from whence I have taken a part of this description.

In Lapland, and the extensive forests to the north, the squirrels are observed to change their habitation, and to remove in vast numbers from one country to another. In these migrations, they are generally seen by thousands, travelling directly forward; while neither rocks, forests, nor even the broadest waters can stop their progress. What I

am going to relate, appears so extraordinary, that were it not attested by numbers of the most credible historians, among whom are Klein and Linnæus, it might be rejected, with that scorn with which we treat imposture or credulity; however, nothing can be more true than that when these animals, in their progress, meet with broad rivers, or extensive lakes, which abound in Lapland, they take a very extraordinary method of crossing them. Upon approaching the banks, and perceiving the breadth of the water, they return, as if by common consent, into the neighbouring forest, each in quest of a piece of bark, which answers all the purposes of boats for wafting them over. When the whole company are fitted in this manner, they boldly commit their little fleet to the waves; every squirrel sitting on its own piece of bark, and fanning the air with its tail, to drive the vessel to its desired port. In this orderly manner they set forward, and often cross lakes several miles broad. But it too often happens that the poor mariners are not aware of the dangers of their navigation; for although at the edge of the water it is generally calm, in the midst it is always more turbulent. There the slightest additional gust of wind oversets the little sailor and his vessel together. The whole navy, that but a few minutes before rode proudly and securely along, is now overturned, and a shipwreck of two or three thousand sail ensues. This, which is so unfortunate for the little animal, is generally the most lucky accident in the world for the Laplander on the shore; who gathers up the dead bodies as they are thrown in by the waves, eats the

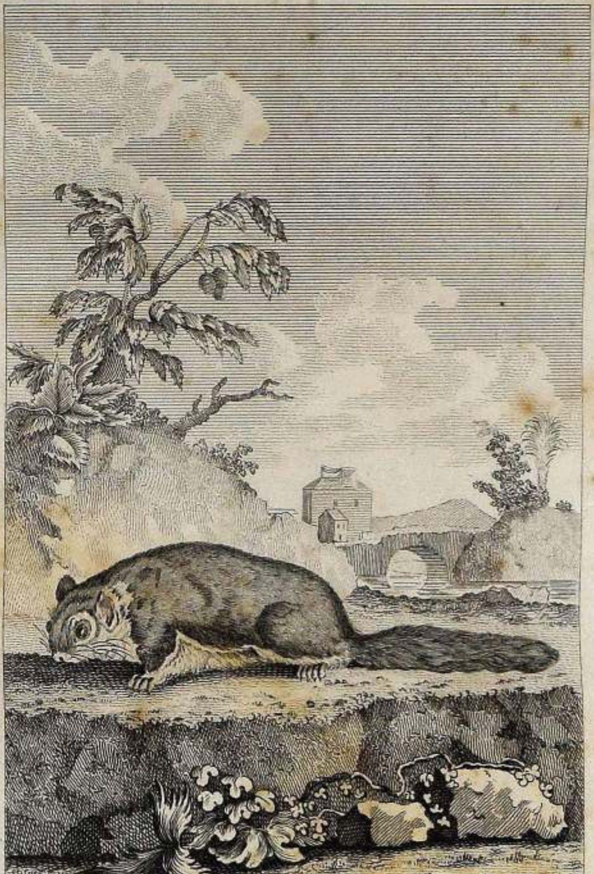
flesh, and sells the skins for abont a shilling the dozen *.

The squirrel is easily tamed, and it is then a very familiar animal. It loves to lie warm, and will often creep into a man's pocket or his bosom. It is usually kept in a box, and fed with hazle nuts. Some find amusement in observing with what ease it bites the nut open, and eats the kernel. In short, it is a pleasing pretty little domestic; and its tricks and habitudes may serve to entertain a mind unequal to stronger operations.

The Flying Squirrel.

MR. RAY was justly of opinion, that the Flying Squirrel might more properly be said to be of the rat kind, because its fur is shorter than in other squirrels, and its colours also more nearly approach the former. However, as mankind have been content to class it among the squirrels, it is scarcely worth making a new distinction in its favour. This little animal, which is frequently brought over to England, is less than a common squirrel, and bigger than a field mouse. Its skin is very soft, and elegantly adorned with a dark fur in some places, and light grey in others. It has large prominent black and very sparkling eyes, small ears, and very sharp teeth, with which it gnaws any thing quickly. When it does not leap, its tail, which is pretty enough, lies close to its back; but when it takes its spring, the tail is moved backwards and forwards from side to side. It is said to

* Oeuvres de Regnard.



De Seve del. Warner sc.

The Flying Squirrel

De Seve del.   Warner sc.

The Squirrel in the act of Flying

partake somewhat of the nature of the squirrel, of the rat, and of the dormouse; but that in which it is distinguished from all other animals, is its peculiar conformation for taking those leaps that almost look like flying. It is, indeed, amazing to see it at one bound dart above an hundred yards, from one tree to another. They are assisted in this spring by a very peculiar formation of the skin, that extends from the fore-feet to the hinder; so that when the animal stretches its forelegs forward, and its hind-legs backward, this skin is spread out between them, somewhat like that between the legs of a bat. The surface of the body being thus increased, the little animal keeps buoyant in the air until the force of its first impulsion is expired, and then it descends. This skin, when the creature is at rest, or walking, continues wrinkled up on its sides; but when its limbs are extended, it forms a kind of web between them of above an inch broad on either side, and gives the whole body the appearance of a skin floating in the air. In this manner the flying squirrel changes place, not like a bird, by repeated strokes of its wings, but rather like a paper kite, supported by the expansion of the surface of its body; but with this difference, however, that, being naturally heavier than the air, instead of mounting it descends; and that jump, which upon the ground would not be above forty yards, when from an higher tree to a lower may be above an hundred.

This little animal is more common in America than in Europe, but not very commonly to be seen in either. It is usually found, like the squirrel, on the tops of trees; but, though better fitted for leap-

ing, it is of a more torpid disposition, and is seldom seen to exert its powers; so that it is often seized by the polecat and the martin. It is easily tamed, but apt to break away whenever it finds an opportunity. It does not seem fond of nuts or almonds, like other squirrels, but is chiefly pleased with the sprouts of the birch, and the cones of the pine. It is fed in its tame state with bread and fruits; it generally sleeps by day, and is always most active by night. Some naturalists gravely caution us not to let it get among our corn-fields, where they tell us it will do a great deal of damage, by cropping the corn as soon as it begins to ear *!

[Mr. Pennant describes a species inhabiting the woods of Java, which he denominates the hooded squirrel. It is of a rusty-brown colour, paler underneath, with the flying membrane extending to the ends of all the limbs, and reaching round the shoulders and throat in the manner of a cloak or a great coat. Its tail is remarkably bushy, and spread on each side.]

The Marmot †.

FROM the description of the squirrel and its varieties, we proceed to a different tribe of animals,

* He may easily be made tame; but he is apt to do a great deal of damage in the corn-fields, because he will crop the corn as soon as it begins to ear. BROOKE'S NAT. HIST.

[† The Marmots have two wedge-shaped front teeth in each jaw; five grinders on each side in the upper jaw, and four in the lower; and they have a perfect collar-bone: the fore-feet have four claws and a very small kind of thumb; the hind feet have five claws. It does not, as the Count de Buffon supposes, chew the cud.]

De Seve del. Warner sc.

The Marmot.

no way indeed resembling the squirrel, but still something like the rabbit and the hare. We are to keep these two animals still in view, as the centre of our comparison; as objects to which many others may bear some similitude, though they but little approach each other. Among the hare kind is the Marmot, which naturalists have placed either among the hare kind or the rat kind, as it suited their respective systems. In fact, it bears no great resemblance to either; but of the two it approaches much nearer the hare, as well in the make of its head, as in its size, in its bushy tail, and particularly in its chewing the cud, which alone is sufficient to determine our choice in giving it its present situation. How it ever came to be degraded into the rat or the mouse I cannot conceive, for it no way resembles them in size, being nearly as big as a hare; or in its disposition, since no animal is more tractable, nor more easily tamed.

The marmot is, as was said, almost as big as a hare, but it is more corpulent than a cat, and has shorter legs. Its head pretty nearly resembles that of a hare, except that its ears are much shorter. It is clothed all over with very long hair, and a shorter fur below. These are of different colours, black and grey. The length of the hair gives the body the appearance of greater corpulence than it really has, and at the same time shortens the feet so that its belly seems touching the ground. Its tail is tufted and well furnished with hair, and it is carried in a straight direction with its body. It has five claws behind, and only four before. These it uses as the squirrel does, to carry its food to its

mouth; and it usually sits upon its hinder parts to feed, in the manner of that little animal.

The marmot is chiefly a native of the Alps; and when taken young is tamed more easily than any other wild animal, and almost as perfectly as any of those that are domestic *. It is readily taught to dance, to wield a cudgel, and to obey the voice of its master. Like the cat, it has an antipathy to the dog; and when it becomes familiar to the family, and is sure of being supported by its master, it attacks and bites even the largest mastiff. From its squat muscular make, it has great strength joined to great agility. It has four large cutting teeth, like all those of the hare kind; but it uses them to much more advantage, since in this animal they are very formidable weapons of defence. However, it is in general a very inoffensive animal; and, except its enmity to dogs, seems to live in friendship with every creature, unless when provoked. If not prevented, it is very apt to gnaw the furniture of an house, and even to make holes through wooden partitions; from whence, perhaps, it has been compared to the rat. As its legs are very short, and made somewhat like those of a bear, it is often seen sitting up, and even walking on its hind-legs in like manner; but with the fore-paws, as was said, it uses to feed itself in the manner of a squirrel. Like all of the hare kind, it runs much swifter up hill than down; it climbs trees with great ease, and runs up the clefts of rocks, or the contiguous walls of houses, with great facility. It is ludicrously said that the Savoyards, who are the

* Buffon, from whence the remainder of this description is taken. *N. B.* He takes it from Gesner, vol. xvii.

only chimney-sweepers of Paris, have learned this art from the marmot, which is bred in the same country.

These animals eat indiscriminately of whatever is presented to them; flesh, bread, fruits, herbs, roots, pulse, and insects. But they are particularly fond of milk and butter. Although less inclined to petty thefts than the cat, yet they always try to steal into the dairy, where they lap up the milk like a cat, purring all the while like that animal, as an expression of their being pleased. As to the rest, milk is the only liquor they like. They seldom drink water, and refuse wine. When pleased or caressed, they often yelp like puppies; but when irritated or frighted, they have a piercing note that hurts the ear. They are very cleanly animals, and, like the cat, retire upon necessary occasions; but their bodies have a disagreeable scent, particularly in the heat of summer. This tinctures their flesh, which, being very fat and firm, would be very good, were not this flavour always found to predominate.

We have hitherto been describing affections in this animal which it has in common with many others; but we now come to one which particularly distinguishes it from all others of this kind, and, indeed, from every other quadruped, except the bat and the dormouse. This is its sleeping during the winter. The marmot, though a native of the highest mountains, and where the snow is never wholly melted, nevertheless seems to feel the influence of the cold more than any other, and in a manner has all its faculties chilled up in winter. This extraordinary suspension of life and motion for more

than half the year, deserves our wonder, and excites our attention to consider the manner of such a temporary death, and the subsequent revival. But first to describe, before we attempt to discuss.

The marmot, usually, at the end of September, or the beginning of October, prepares to fit up its habitation for the winter, from which it is never seen to issue till about the beginning or the middle of April. This animal's little retreat is made with great precaution, and fitted up with art. It is an hole on the side of a mountain, extremely deep, with a spacious apartment at the bottom, which is rather longer than it is broad. In this several marmots can reside at the same time, without crowding each other, or injuring the air they breathe. The feet and claws of this animal seem made for digging; and, in fact, they burrow into the ground with amazing facility, scraping up the earth like a rabbit, and throwing back what they have thus loosened behind them. But the form of their hole is still more wonderful; it resembles the letter Y; the two branches being two openings, which conduct into one channel, which terminates in their general apartment that lies at the bottom. As the hole is made on the declivity of a mountain, there is no part of it on a level, but the apartment at the end. One of the branches or openings issues out, sloping downwards; and this serves as a kind of sink or drain to the whole family, where they make their excrements, and where the moisture of the place is drawn away. The other branch, on the contrary, slopes upwards, and this serves as their door upon which to go out and in. The apartment at the end is very warmly stuccoed round with moss and hay,

of both which they make an ample provision during the summer. As this is a work of great labour, so it is undertaken in common; some cut the finest grass, others gather it, and others take their turns to drag it into their hole. Upon this occasion, as we are told, one of them lies on its back, permits the hay to be heaped upon its belly, keeps its paws upright to make greater room; and in this manner, lying still upon its back, it is dragged by the tail, hay and all, to their common retreat. This also some give as a reason for the hair being generally worn away on their backs, as is usually the case; however, a better reason for this may be assigned, from their continually rooting up holes, and passing through narrow openings. But, be this as it will, certain it is that they all live together, and work in common to make their habitation as snug and convenient as possible. In it they pass three parts of their lives; into it they retire when the storm is high; in it they continue while it rains; there they remain when apprehensive of danger, and never stir out except in fine weather, never going far from home even then. Whenever they venture abroad, one is placed as a centinel, sitting upon a lofty rock, while the rest amuse themselves in playing along the green fields, or are employed in cutting grass and making hay for their winter's convenience. Their trusty centinel, when an enemy, a man, a dog, or a bird of prey approaches, apprizes its companions with a whistle, upon which they all make home, the centinel himself bringing up the rear.

But it must not be supposed that this hay is designed for provision; on the contrary, it is always found in as great plenty in their holes at the end

as at the beginning of winter; it is only sought for the convenience of their lodging, and the advantages of their young. As to provision, they seem kindly apprized by Nature that during the winter they shall not want any, so that they make no preparations for food, though so diligently employed in fitting up their abode. As soon as they perceive the first approaches of the winter, during which their vital motions are to continue in some measure suspended, they labour very diligently to close up the two entrances of their habitation, which they effect with such solidity, that it is easier to dig up the earth any where else than where they have closed it. At that time they are very fat, and some of them are found to weigh above twenty pounds; they continue so for even three months more; but by degrees their flesh begins to waste, and they are usually very lean by the end of winter. When their retreat is opened, the whole family is then discovered, each rolled into a ball, and covered up under the hay. In this state they seem entirely lifeless; they may be taken away, and even killed, without their testifying any great pain; and those who find them in this manner carry them home, in order to breed up the young, and eat the old ones. A gradual and gentle warmth revives them; but they would die if too suddenly brought near the fire, or if their juices were too quickly liquefied.

Strictly speaking, says M. Buffon, these animals cannot be said to sleep during the winter; it may be called rather a torpor, a stagnation of all the faculties*. This torpor is produced by the congelation of their blood, which is naturally much colder

* Buffon, vol. xvi. Loirs.

than that of all other quadrupeds. The usual heat of man, and other animals, is about thirty degrees above congelation; the heat of these is not above ten degrees. Their internal heat is seldom greater than that of the temperature of the air. This has been often tried by plunging the ball of the thermometer into the body of a living dormouse, and it never rose beyond its usual pitch in air, and sometimes it sunk above a degree. It is not surprising, therefore, that these animals, whose blood is so cold naturally, should become torpid, when the external cold is too powerful for the small quantity of heat in their bodies, yet remaining; and this always happens when the thermometer is not more than ten degrees above congelation. This coldness M. Buffon has experienced in the blood of the bat, the dormouse, and the hedgehog, and with great justice he extends the analogy to the marmot, which like the rest is seen to sleep all the winter. This torpid state continues as long as the cause which produces it continues; and it is very probable that it might be lengthened out beyond its usual term, by artificially prolonging the cold; if, for instance, the animal were rolled up in wool, and placed in a cold cellar, nearly approaching to, but not quite so cold as an ice-house, for that would kill them outright, it would remain perhaps a whole year in its state of insensibility. However this be, if the heat of the air be above ten degrees, these animals are seen to revive; and if it be continued in that degree of temperature, they do not become torpid, but eat and sleep at proper intervals, like all other quadrupeds whatever.

From the above account, we may form some conception of the state in which these animals continue

during the winter. As in some disorders, where the circulation is extremely languid, the appetite is diminished in proportion, so in these the blood scarcely moving, or only moving in the greater vessels, they want no nourishment to repair what is worn away by its motions. They are seen, indeed, by slow degrees, to become leaner in proportion to the slow attrition of their fluids; but this is not perceptible except at the end of some months. Man is often known to gather nourishment from the ambient air; and these also may in some measure be supplied in the same manner; and, having sufficient motion in their fluids to keep them from putrefaction, and just sufficient nourishment to supply the waste of their languid circulation, they continue rather feebly alive than sleeping.

These animals produce but once a year, and usually bring forth but three or four at a time. They grow very fast, and the extent of their lives is not above nine or ten years; so that the species is neither numerous nor very much diffused. They are chiefly found in the Alps, where they seem to prefer the brow of the highest mountains to the lowest ranges, and the sunny side to that in the shade. The inhabitants of the country where they chiefly reside, when they observe the hole, generally stay till winter before they think proper to open it; for if they begin too soon, the animal wakes, and, as it has a surprising faculty of digging, makes its hole deeper in proportion as they follow. Such as kill it for food, use every art to improve the flesh, which is said to have a wild taste, and to cause

The Agouti.

vomitings *. They, therefore, take away the fat, which is in great abundance, and salt the remainder, drying it somewhat in the manner of bacon. Still, however, it is said to be very indifferent eating. This animal is found in Poland under the denomination of the Bobak, entirely resembling that of the Alps, except that the latter has a toe more upon its fore-foot than the former. It is found also in Siberia under the name of the Jevraska, being rather smaller than either of the other two. Lastly, it is found in Canada by the appellation of the Monax, differing only from the rest in having a blueish snout, and a longer tail.

The Agouti †.

FROM the marmot, which differs from the hare so much in the length of its fur, we go to the Agouti, another species equally differing in the shortness of its hair. These bear some rude resemblance to the hare and the rabbit in their form and manner of living, but sufficiently differing to require a particular description. The first of

* Dictionnaire Raisonnée, vol. iii. p. 29.

[† This animal, together with the Paca, Apera, Guinea Pig, Capibara, and a few other species, are now arranged under the general appellation of Cavy. They are distinguished by having two wedge-shaped front teeth in each jaw, and eight grinders on each side in both jaws: they have from four to six toes on the fore feet, and from three to five on the hinder: the tail is very short or none, and they have no collar bones. They are inhabitants of warmer regions, live entirely on vegetable substances, reside under ground or beneath the roots of trees, and move with a slow and a kind of leaping pace.]

these, and that the largest, as was hinted above, is called the Agouti. This animal is found in great abundance in the southern parts of America, and has by some been called the rabbit of that continent. But, though in many respects it resembles the rabbit, yet still in many more it differs, and is, without all doubt, an animal peculiar to the new world only. The agouti is about the size of a rabbit, and has a head very much resembling it, except that the ears are very short in comparison. It resembles the rabbit also in the arched form of its back, in the hind legs being longer than the fore, and in having four great cutting teeth, two above and two below; but then it differs in the nature of its hair, which is not soft and downy as in the rabbit, but hard and bristly like that of a sucking pig, and of a reddish brown colour. It differs also in the tail, which is even shorter than in the rabbit, and entirely destitute of hair. Lastly, it differs in the number of its toes, having but three on the hinder feet, whereas the rabbit has five. All these distinctions, however, do not countervail against its general form, which resembles that of a rabbit, and most travellers have called it by that name.

As this animal differs in form, it differs still more in habitudes and disposition. As it has the hair of an hog, so also it has its voraciousness *. It eats indiscriminately of all things; and, when satiated, hides the remainder, like the dog or the fox, for a future occasion. It takes a pleasure in gnawing and spoiling every thing that comes near. When irritated, its hair stands erect along the back, and like the rabbit, it strikes the ground violently

* Buffon.

with its hind feet. It does not dig a hole in the ground, but burrows in the hollows of trees. Its ordinary food consists of the roots of the country, potatoes, and yams, and such fruits as fall from the trees in autumn. It uses its fore-paws like the squirrel, to carry its food to its mouth; and as its hind feet are longer than the fore, it runs very swiftly upon plain ground or up a hill, but upon a descent it is in danger of falling. Its sight is excellent, and its hearing equals that of any other animal; whenever it is whistled to it stops to hearken. The flesh of such as are fat and well fed is tolerable food, although it has a peculiar taste, and is a little tough. The French dress it like a sucking pig, as we learn from M. Buffon's account; but the English dress it with a pudding in its belly, like a hare. It is hunted by dogs; and whenever it is got into a sugar-ground, where the canes cover the place, it is easily overtaken, for it is embarrassed every step it takes, so that a man may easily come up with it without any other assistance. When in the open country, it usually runs with great swiftness before the dogs until it gains its retreat, within which it continues to hide, and nothing but filling the hole with smoke can force it out. For this purpose the hunter burns faggots or straw at the entrance, and conducts the smoke in such a manner that it fills the whole cavity. While this is doing, the poor little animal seems sensible of its danger, and begs for quarter with a most plaintive cry, seldom quitting its hole till the utmost extremity. At last, when half suffocated, it issues out, and trusts once more to its speed for protection. When still forced by the dogs, and incapable of making

good a retreat, it turns upon the hunters, and with its hair bristling like a hog, and standing upon its hind feet, it defends itself very obstinately. Sometimes it bites the legs of those that attempt to take it, and will take out the piece wherever it fixes its teeth*.

Its cry when disturbed or provoked resembles that of a sucking pig. If taken young, it is easily tamed, continues to play harmlessly about the house, and goes out and returns of its own accord. In a savage state it usually continues in the woods, and the female generally chuses the most obscure parts to bring forth her young. She there prepares a bed of leaves and dry grass, and generally brings forth two at a time. She breeds twice or thrice a year, and carries her young from one place to another, as convenience requires, in the manner of a cat. She generally lodges them when three days old in the hollow of a tree, suckling them but for a very short time, for they soon come to perfection, and it should consequently follow that they soon grow old.

The Paca.

THE Paca is an animal also of South America, very much resembling the former, and like it has received the name of the American rabbit, but with as little propriety. It is about the size of an hare, or rather larger, and in figure somewhat like a sucking pig, which it also resembles in its grunt-

* Ray's Synop.

De Seve del. Warner sc.

The Paca.

ing and its manner of eating. It is, however, most like the agouti, although it differs in several particulars. Like the agouti, it is covered rather with coarse hair than a downy fur. But then it is beautifully marked along the sides with small ash-coloured spots, upon an amber-coloured ground; whereas the agouti is pretty much of one reddish colour. The paca is rather more thick and corpulent than the agouti; its nose is shorter, and its hind feet have five toes; whereas the agouti has but three. As to the rest, this animal bears some distant resemblance to a rabbit, the ears are naked of hair, and somewhat sharp, the upper jaw is somewhat longer than the lower, the teeth, the shape of the head, and the size of it, are like to those of a rabbit. It has a short tail likewise, though not tufted, and its hinder legs are longer than the fore. It also burrows in the ground like that animal, and from this similitude alone travellers might have given it the name.

The paca does not make use of its fore-paws, like the squirrel or the agouti, to carry its food to the mouth, but hunts for it on the ground, and roots like an hog. It is generally seen along the banks of rivers, and is only to be found in the moist and warm countries of South America. It is a very fat animal, and in this respect much preferable to the agouti, that is most commonly found lean. It is eaten, skin and all, like a young pig, and is considered as a great delicacy. Like the former little animal, it defends itself to the last extremity, and is very seldom taken alive. It is persecuted not only by man, but by every beast and bird of prey, who all watch its motions, and,

if it ventures at any distance from its hole, are sure to seize it. But although the race of these little animals is thus continually destroyed, it finds some refuge in its hole, from the general combination; and breeds in such numbers, that the diminution is not perceptible.

To these animals may be added others, very similar both in form and disposition; each known by its particular name in its native country, but which travellers have been contented to call rabbits or hares; of which we have but indistinct notice. The Tapeti, or the Brasilian rabbit, is in shape like our English ones, but is much less, being said to be not above twice the size of a dormouse. It is reddish on the forehead, and a little whitish under the throat. It is remarkable for having no tail; but it has long ears, with whiskers, like our rabbits, and black eyes. It does not burrow, like ours; but lives at large, like the hare.

The Aperea is also called by some the Brasilian rabbit, being an animal that seems to partake of the nature of a rabbit and a rat. The ears are like those of a rat, being short and round; but the other parts are like those of a rabbit, except that it has but three toes on the hinder legs, like the agouti.

To these imperfect sketches of animals little known, others less known might be added; for as Nature becomes more diminutive, her operations are less attentively regarded. I shall only, therefore, add one animal more to this class, and that very well known; I mean the Guinea-pig; which Brisson places among those of the rabbit kind;

De Seve del. Warner sc.

The Guinea Pig.

and as I do not know any other set of animals with which it can be so well compared, I will take leave to follow his example.

The Guinea-Pig.

THE Guinea-Pig is a native of the warmer climates; but has been so long rendered domestic, and so widely diffused, that it is now become common in every part of the world. There are few unacquainted with the figure of this little animal; in some places it is considered as the principal favourite; and is often found even to displace the lap-dog. It is less than a rabbit, and its legs are shorter; they are scarcely seen, except when it moves; and the neck, also, is so short, that the head seems stuck upon the shoulders. The ears are short, thin, and transparent; the hair is like that of a sucking pig, from whence it has taken the name; and it wants even the vestiges of a tail. In other respects, it has some similitude to the rabbit. When it moves, its body lengthens like that animal; and when it is at rest, it gathers up in the same manner. Its nose is formed with the rabbit lip, except that its nostrils are much farther asunder. Like all other animals in a domestic state, its colours are different; some are white, some are red, and others both red and white. It differs from the rabbit in the number of its toes, having four toes on the feet before, and but three on those behind. It strokes its head with the fore feet like the rabbit; and, like it, sits upon the hind feet; for which pur-

pose there is a naked callous skin on the back part of the legs and feet.

These animals are of all others the most helpless and inoffensive *. They are scarcely possessed of courage sufficient to defend themselves against the meanest of all quadrupeds, a mouse. Their only animosity is exerted against each other; for they will often fight very obstinately; and the stronger is often known to destroy the weaker. But against all other aggressors, their only remedy is patience and non-resistance. How, therefore, these animals, in a savage state, could contrive to protect themselves, I have not been able to learn; as they want strength, swiftness, and even the natural instinct so common to almost every other creature.

As to their manner of living among us, they owe their lives entirely to our unceasing protection. They must be constantly attended, shielded from the excessive colds of the winter, and secured against all other domestic animals, which are apt to attack them, from every motive, either of appetite, jealousy, or experience of their pusillanimous nature. Such indeed is their stupidity, that they suffer themselves to be devoured by the cats, without resistance; and, different from all other creatures, the female sees her young destroyed without once attempting to protect them. Their usual food is bran, parsley, or cabbage-leaves; but there is scarcely a vegetable cultivated in our gardens that they will not gladly devour. The carrot-top is a peculiar dainty; as also sallad; and those who

* This history is partly taken from the Amænitates Academicæ, vol. iv. p. 202.

would preserve their healths, would do right to vary their food; for if they be continued on a kind too succulent or too dry, the effects are quickly perceived upon their constitution. When fed upon recent vegetables, they seldom drink. But it often happens that, conducted by nature, they seek drier food, when the former disagrees with them. They then gnaw clothes, paper, or whatever of this kind they meet with; and, on these occasions, they are seen to drink like most other animals, which they do by lapping. They are chiefly fond of new milk; but, in case of necessity, are contented with water.

They move pretty much in the manner of rabbits, though not near so swiftly; and when confined in a room, seldom cross the floor, but generally keep along the wall. The male usually drives the female on before him, for they never move a-breast together; but constantly the one seems to tread in the footsteps of the preceding. They chiefly seek for the darkest recesses, and the most intricate retreats; where, if hay be spread as a bed for them, they continue to sleep together, and seldom venture out but when they suppose all interruption removed. On these occasions they act as rabbits; they swiftly move forward from their bed, stop at the entrance, listen, look round, and, if they perceive the slightest approach of danger, they run back with precipitation. In very cold weather, however, they are more active, and run about in order to keep themselves warm.

They are a very cleanly animal, and very different from that whose name they go by. If the young ones happen to fall into the dirt, or be any other

way discomposed, the female takes such an aversion to them that she never permits them to visit her more. Indeed, her whole employment, as well as that of the male, seems to consist in smoothing their skins, in disposing their hair, and improving its gloss. The male and female take this office by turns; and when they have thus brushed up each other, they then bestow all their concern upon their young, taking particular care to make their hair lie smooth, and biting them if they appear refractory. As they are so solicitous for elegance themselves, the place where they are kept must be regularly cleaned, and a new bed of hay provided for them at least every week. Being natives of a warm climate, they are naturally chilly in ours: cleanliness, therefore, assists warmth, and expels moisture. They may be thus reared, without the aid of any artificial heat; but, in general, there is no keeping them from the fire in winter, if they be once permitted to approach it.

When they go to sleep, they lie flat on their bellies, pretty much in their usual posture; except that they love to have their fore feet higher than their hinder. For this purpose, they turn themselves several times round before they lie down, to find the most convenient situation. They sleep, like the hare, with their eyes half open; and continue extremely watchful, if they suspect danger. The male and female are never seen both asleep at the same time; but while he enjoys his repose, she remains upon the watch, silently continuing to guard him, and her head turned towards the place where he lies. When she supposes that he has had his turn, she then awakes him with a kind of

murmuring noise, goes to him, forces him from his bed, and lies down in his place. He then performs the same good turn for her; and continues watchful till she also has done sleeping.

These animals are exceedingly salacious, and generally are capable of coupling at six weeks old. The female never goes with young above five weeks; and usually brings forth from three to five at a time; and this not without pain. But what is very extraordinary, the female admits the male the very day she has brought forth, and becomes again pregnant; so that their multiplication is astonishing. She suckles her young but about twelve or fifteen days; and during that time does not seem to know her own; for if the young of any other be brought, though much older, she never drives them away, but suffers them even to drain her, to the disadvantage of her own immediate offspring. They are produced with the eyes open, like all others of the hare kind; and in about twelve hours, equal even to the dam in agility. Although the dam has but two teats, yet she abundantly supplies them with milk: and they are also capable of feeding upon vegetables, almost from the very beginning. If the young ones are permitted to continue together, the stronger, as in all other societies, soon begins to govern the weak. Their contentions are often long and obstinate; and their jealousies very apparent. Their disputes are usually for the warmest place, or the most agreeable food. If one of them happens to be more fortunate in this respect than the rest, the strongest generally comes to dispossess it of its advantageous situation. Their manner of fighting, though terrible to them, is ridiculous

enough to a spectator. One of them seizes the hair on the nape of the other's neck with its fore teeth, and attempts to tear it away; the other, to retaliate, turns its hinder parts to the enemy, and kicks up behind like an horse, and with its hinder claws scratches the sides of its adversary; so that sometimes they cover each other with blood. When they contend in this manner, they gnash their teeth pretty loudly; and this is often a denunciation of mutual resentment.

These, though so formidable to each other, yet are the most timorous creatures upon earth, with respect to the rest of animated nature: a falling leaf disturbs them, and every animal overcomes them. Hence they are difficultly tamed; and will suffer none to approach them, except the person by whom they are fed. Their manner of eating is something like that of the rabbit; and, like it, they appear also to chew the cud. Although they seldom drink, they make water every minute. They grunt somewhat like a young pig; and have a more piercing note to express pain. In a word, they do no injury; but then, except the pleasure they afford the spectator, they are of very little benefit to mankind. Some, indeed, dress and eat them; but their flesh is indifferent food, and by no means a reward for the trouble of rearing them. This, perhaps, might be improved, by keeping them in a proper warren, and not suffering them to become domestic: however, the advantages that would result from this, would be few, and the trouble great; so that it is likely they will continue an useless, inoffensive dependant, rather propagated to satisfy caprice than supply necessity.

CHAP. IV.

Of Animals of the Rat Kind.*

WERE it necessary to distinguish animals of the rat kind from all others, we might describe them as having two large cutting teeth, like the hare kind, in each jaw; as covered with hair; and as not ruminating. These distinctions might serve to guide us, had we not too near an acquaintance with this noxious race to be mistaken in their kind. Their numbers, their minuteness, their vicinity, their vast multiplication, all sufficiently contribute to press them upon our observation, and remind us of their existence. Indeed, if we look through the different ranks of animals, from the largest to the smallest, from the great elephant to the diminutive mouse, we shall find that we suffer greater injuries from the contemptible meanness of the one, than the formidable invasions of the other. Against the elephant, the rhinoceros, or the lion, we can oppose united strength; and by art make up the deficiencies of natural power: these we have driven into their native solitudes, and obliged to continue at a distance, in the most inconvenient regions and unhealthful climates. But it is otherwise with the little teazing race I am now describing: no force can be exerted against their unresisting timidity;

[* These have the upper front teeth wedge-shaped, three grinders on each side in each jaw, though sometimes only two, and have perfect collar bones. There are forty six distinct species.]

no arts can diminish their amazing propagation: millions may be at once destroyed, and yet the breach be repaired in the space of a very few weeks; and, in proportion as nature has denied them force, it has supplied the defect by their fecundity.

Of these, the animal best known at present, and in every respect the most mischievous, is the Great Rat; which, though but a new comer into this country, has taken too secure a possession to be ever removed. This hateful and rapacious creature, though sometimes called the Rat of Norway, is utterly unknown in all the northern countries, and, by the best accounts I can learn, comes originally from the Levant. Its first arrival, as I am assured, was upon the coasts of Ireland, in those ships that traded in provisions to Gibraltar; and perhaps we owe to a single pair of these animals, the numerous progeny that now infests the whole extent of the British empire.

This animal, which is called by M. Buffon the Surmalot, is in length about nine inches; its eyes are large and black; the colour of the head, and the whole upper part of the body, is of a light brown, mixed with tawny and ash colour. The end of the nose, the throat, and belly, are of a dirty white, inclining to a grey; the feet and legs are almost bare, and of a dirty pale flesh colour; the tail is as long as the body, covered with minute dusky scales, mixed with a few hairs, and adds to the general deformity of its detestable figure. It is chiefly in the colour that this animal differs from the Black Rat, or the Common Rat, as it was once called; but now common no longer. This new invader, in a very few years after its arrival, found

means to destroy almost the whole species, and to possess itself of their retreats.

But it was not against the Black Rat alone that its rapacity was directed; all other animals of inferior strength shared the same misfortunes. The contest with the black rat was of short continuance. As it was unable to contend, and had no holes to fly to for retreat, but where its voracious enemy could pursue, the whole race was soon extinguished. The frog also was an animal equally incapable of combat or defence. It had been designedly introduced into the kingdom of Ireland some years before the Norway rat; and it was seen to multiply amazingly. The inhabitants were pleased with the propagation of an harmless animal, that served to rid their fields of insects; and even the prejudices of the people were in its favour, as they supposed that the frog contributed to render their waters more wholesome. But the Norway rat soon put a stop to their increase; as these animals were of an amphibious nature, they pursued the frog to its lakes, and took it even in its own natural element. I am, therefore, assured, that the frog is once more almost extinct in that kingdom; and that the Norway rat, having no more enemies left there to destroy, is grown less numerous also.

We are not likely, therefore, to gain by the destruction of our old domestics, since they are replaced by such mischievous successors. The Norway rat has the same disposition to injure us, with much greater power of mischief. It burrows in the banks of rivers, ponds, and ditches; and is every year known to do incredible damage to those mounds that are raised to conduct streams, or to

prevent rivers from overflowing. In these holes, which it forms pretty near the edge of the water, it chiefly resides during the summer, where it lives upon small animals, fish, and corn. At the approach of winter, it comes nearer the farm-houses; burrows in their corn, eats much, and damages still more than it consumes. But nothing that can be eaten, seems to escape its voracity. It destroys rabbits, poultry, and all kinds of game; and, like the polecat, kills much more than it can carry away. It swims with great ease, dives with great celerity, and easily thins the fish pond. In short, scarcely any of the feebler animals escape its rapacity, except the mouse, which shelters itself in its little hole, where the Norway rat is too big to follow.

These animals frequently produce from ten to fifteen at a time; and usually bring forth three times a year. This great increase would quickly be found to over-run the whole country, and render our assiduity to destroy them fruitless, were it not, happily for us, that they eat and destroy each other. The same insatiable appetite that impels them to indiscriminate carnage, also incites the strongest to devour the weakest, even of their own kind. The large male rat generally keeps in an hole by itself, and is as dreaded by its own species, as the most formidable enemies. In this manner the number of these vermin is kept within due bounds; and when their increase becomes injurious to us, it is repressed by their own rapacity.

But beside their own enmities among each other, all the stronger carnivorous quadrupeds have natural antipathies against them. The dog, though he

detests their flesh, yet openly declares his alacrity to pursue them; and attacks them with great animosity. Such as are trained up to killing these vermin, dispatch them often with a single squeeze: but those dogs that shew any hesitation, are sure to come off but indifferently; for the rat always takes the advantage of a moment's delay, and, instead of waiting for the attack, becomes the aggressor, seizing its pursuer by the lip, and inflicting a very painful and dangerous wound. From the inflammation, and other angry symptoms that attend this animal's bite, some have been led to think that it was in some measure venomous; but it is likely that the difficulty of the wound's healing arises merely from its being deep and lacerated by the teeth, and is rather a consequence of the figure of the instruments that inflict it, than any venom they may be supposed to possess.

The cat is another formidable enemy of this kind; and yet the generality of our cats neither care to attack it, nor to feed upon it when killed. The cat is a more prudent hunter than the dog, and will not be at the pains to take or combat with an enemy that is not likely to repay her time and danger. Some cats, however, will pursue and take the rat; though often not without an obstinate resistance. If hungry, also, the cat will sometimes eat the head; but, in general, she is merely content with her victory.

A foe much more dangerous to these vermin is the weasel. This animal pursues them with avidity; and being pretty nearly of their own size, follows them into their holes, where a desperate combat ensues. The strength of each is pretty nearly equal;

but the arms are very different. The rat, furnished with four long tusks at the extremity of its jaw rather snaps than bites; but the weasel, where it once fastens, holds, and continuing also to suck the blood at the same time, weakens its antagonist, and always obtains the victory. Mankind have contrived several other methods of destroying these noxious intruders; ferrets, traps, and particularly poison: but of all other poisons, I am told that the nux vomica, ground and mixed with meal, is the most certain, as it is the least dangerous.

To this species I will subjoin as a variety, the Black Rat, mentioned above, greatly resembling the former in figure, but very distinct in nature, as appears from their mutual antipathy. This animal was formerly as mischievous as it was common; but at present it is almost utterly extirpated by the great rat, one malady often expelling another. It is become so scarce, that I do not remember ever to have seen one. It is said to be possessed of all the voracious and unnatural appetites of the former; though, as it is less, they may probably be less noxious. Its length is about seven inches; and the tail is near eight inches long. The colour of the body is of a deep iron grey, bordering upon black, except the belly, which is of a dirty cinereous hue. They have propagated in America in great numbers, being originally introduced from Europe; and as they seem to keep their ground wherever they get footing, they are now become the most noxious animals in that part of the world.

To this also we may subjoin the Black Water Rat, about the same size with the latter, with a larger head, a blunter nose, less eyes, and shorter

ears, and the tip of its tail a little white. It was supposed by Ray to be web-footed; but this has been found to be a mistake, its toes pretty much resembling those of its kind. It never frequents houses; but is usually found on the banks of rivers, ditches, and ponds, where it burrows and breeds. It feeds on fish, frogs, and insects; and in some countries it is eat on fasting days*.

The Mouse.

AN animal equally mischievous, and equally well known with the former, is the Mouse. Timid, cautious, and active, all its dispositions are similar to those of the rat, except with fewer powers of doing mischief †. Fearful by nature, but familiar from necessity, it attends upon mankind, and comes an unbidden guest to his most delicate entertainments. Fear and necessity seem to regulate all its motions; it never leaves its hole but to seek provision, and sel-

[* Dr. Shaw, in his general zoology, informs us, that a gentleman travelling through Mecklenburg about thirty years ago, was witness to the following curious circumstance in the post house at New Stargard. After dinner the landlord placed on the floor a large dish of soup, and gave a loud whistle. Immediately then came into the room a mastiff, a fine Angora cat, an old raven, and a remarkably large rat with a bell about its neck. The four animals went to the dish, and without disturbing each other, fed together: after which the dog, cat, and rat, lay before the fire, while the raven hopped about the room. The landlord, after accounting for the familiarity which existed among the animals, informed his guest that the rat was the most useful of the four; for the noise he made had completely freed the house from the rats and mice with which it was before infested.]

† Buffon, vol. xv. p. 145.

dom ventures above a few paces from home. Different from the rat, it does not go from one house to another, unless it be forced; and, as it is more easily satisfied, it does much less mischief.

Almost all animals are tamed more difficultly in proportion to the cowardice of their natures. The truly bold and courageous easily become familiar, but those that are always fearful are ever suspicious. The mouse being the most feeble, and consequently the most timid of all quadrupeds, except the guinea-pig, is never rendered thoroughly familiar; and, even though fed in a cage, retains its natural apprehensions. In fact, it is to these alone that it owes its security *. No animal has more enemies, and few so incapable of resistance. The owl, the cat, the snake, the hawk, the weasel, and the rat itself, destroys this species by millions, and it only subsists by its amazing fecundity.

The mouse brings forth at all seasons, and several times in the year. Its usual number is from six to ten. These in less than a fortnight are strong enough to run about and shift for themselves. They are chiefly found in farmers yards, and among their corn, but are seldom in those ricks that are much infested with rats. They generally chuse the south-west side of the rick, from whence most rain is expected; and from thence they often, of an evening, venture forth to drink the little drops either of rain or dew that hang at the extremities of the straw†. Aristotle gives us an idea of their prodigious fecundity, by assuring us that having put a

* E volucribus hirundines sunt indociles, e terrestibus mures. Plin.

† Buffon, vol. xv. p. 147, vol. ii. p. 391.

mouse with young into a vessel of corn, in some time after he found an hundred and twenty mice, all sprung from one original. The early growth of this animal implies also the short duration of its life, which seldom lasts above two or three years. This species is very much diffused, being found in almost all parts of the ancient continent, and having been exported to the new *. They are animals that while they fear human society, closely attend it; and, although enemies to man, are never found but near those places where he has fixed his habitation. Numberless ways have been found for destroying them; and Gesner has minutely described the variety of traps by which they are taken. Our Society for the Encouragement of Arts and Manufactures proposed a reward for the most ingenious contrivance for that purpose; and I observed almost every candidate passing off descriptions as inventions of his own. I thought it was cruel to detect the plagiarism, or frustrate the humble ambition of those who would be thought the inventors of a mouse-trap.

To this species, merely to avoid teazing the reader with a minute description of animals very inconsiderable and very nearly alike, I will add that of the *long-tailed field-mouse*, which is larger than the former, of a colour very nearly resembling the Norway rat, and chiefly found in fields and gardens. They are extremely voracious, and hurtful in gardens and young nurseries, where they are killed in great numbers. However, their fecundity quickly repairs the destruction.

Nearly resembling the former, but larger, (for it is six inches long) is the *short-tailed field-mouse*;

* Lisle's Husbandry.

which, as its name implies, has the tail much shorter than the former, it being not above an inch and an half long, and ending in a small tuft. Its colour is more inclining to that of the domestic mouse, the upper part being blackish, and the under of an ash colour. This, as well as the former, are remarkable for laying up provision against winter; and M. Buffon assures us they sometimes have a store of above a bushel at a time.

We may add also the *shrew-mouse* to this species of minute animals, being about the size of the domestic mouse, but differing greatly from it in the form of its nose, which is very long and slender. The teeth also are of a very singular form and twenty-eight in number; whereas the common nnmber in the rat kind is usually not above sixteen. The two upper fore-teeth are very sharp, and on each side of them there is a kind of wing or beard, like that of an arrow, scarcely visible but on a close inspection. The other teeth are placed close together, being very small, and seeming scarcely separated; so that with respect to this part of its formation, the animal has some resemblance to the viper. However, it is a very harmless little creature, doing scarcely any injury. On the contrary, as it lives chiefly in the fields, and feeds more upon insects than corn, it may be considered rather as a friend than an enemy. It has a strong disagreeable smell, so that the cat, when it is killed, will refuse to eat it. It is said to bring four or five young at a time*.

[* The Shrew is distinguished from the rat and the mouse, in having two long cloven teeth in the upper jaw; and two or four in the lower jaw; the intermediate ones being shorter: on each

The Dormouse.

THESE animals may be distinguished into three kinds; the *greater dormouse*, which M. Buffon calls the Loir; the *middle*, which he calls the Lerot; the *less*, which he denominates the Muscardin. They differ from each other in size, the largest being equal to a rat, the least being no bigger than a mouse. They all differ from the rat in having the tail tufted with hair, in the manner of a squirrel, ex-

side, in each jaw, there are several canine teeth; and the grinders are cuspidated, or having the ends sharpened like the point of a spear. The most remarkable of its tribe is the Shrew of Canada, which has the end of its long upper jaw furnished with a circular row of pointed soft processes, disposed in the form of a star.

These rays are of a bright rose colour, and moveable at pleasure, so as to be expanded in the form of a star, or contracted into a kind of tube. Its tail is about three inches long, and knotted like a string of beads.

The Dormouse has two front teeth in each jaw; those in the upper wedge-shaped, in the lower flattened: there are four grinders on each side in each jaw: the snout is furnished with long whiskers: the tail is cylindrical, hairy, and thicker towards the tip: the legs are nearly equal in length, and the fore-feet have four toes.

These animals live in holes under ground, where, during the winter, they continue in a state of torpidity. Their food is solelp of the vegetable kind; and they eat only in the night. Their pace, like that of the Jerboa, is a sort of leap, in which they are assisted by the tail. They drink, not by lapping, as most other quadrupeds, but dip the fore paws in the water with the toes bent, and lift it to their mouths. There are nine several kinds, of which the most elegant is that of Surinam. The body is about five inches long, and the tail six. Its colour is a fine purplish-brown above, paler beneath; the tail is brown on the half nearest the body, the other half being a bright golden yellow: the top of the head is ornamented with a longitudinal stripe of bright yellow.]

cept that the squirrel's tail is flat, resembling a fan; and theirs round, resembling a brush. The lerot differs from the loir, by having two black spots near the eyes; the muscardin differs from both in the whitish colour of its hair on the back. They all three agree in having black sparkling eyes, and the whiskers partly white and partly black. They agree in their being stupefied like the marmot during the winter, and in their hoarding up provisions to serve them in case of a temporary revival.

They inhabit woods or very thick hedges, forming their nests in the hollow of some tree, or near the bottom of a close shrub, humbly content with continuing at the bottom, and never aspiring to sport among the branches. Towards the approach of the cold season they form a litttle magazine of nuts, beans, or acorns; and, having laid in their hoard, shut themselves up with it for the winter. As soon as they feel the first advances of the cold, they prepare to lessen its effect, by rolling themselves up in a ball, and thus exposing the smallest surface to the weather. But it often happens that the warmth of a sunny day, or an accidental change from cold to heat, thaws their nearly stagnant fluids, and they revive. On such occasions they have their provisions laid in, and they have not far to seek for their support. In this manner they continue usually asleep, but sometimes waking, for above five months in the year, seldom venturing from their retreats, and consequently but rarely seen. Their nests are lined with moss, grass, and dead leaves; they usually bring forth three or four young at a time, and that but once a year, in the spring.

The Musk Rat.

OF these animals of the rat kind, but with a musky smell, there are also three distinctions, as of the former; the Ondatra, the Desman, and the Pilori. The Ondatra is a native of Canada, the Desman of Lapland, and the Pilori of the West-India Islands. The ondatra differs from all others of its kind, in having the tail flatted and carried edge-ways. The desman has a long extended snout like the shrew-mouse; and the pilori a short tail, as thick at one end as the other. They all resemble each other in being fond of the water, but particularly in that musky odour from whence they have taken their name.

Of these the ondatra is the most remarkable, and has been the most minutely described*. This animal is about the size of a small rabbit, but has the hair, the colour, and the tail of a rat, except that it is flatted on the sides, as mentioned above. But it is still more extraordinary upon other accounts, and different from all other animals whatever. It is so formed that it can contract and enlarge its body at pleasure. It has a muscle like that of horses, by which they move their hides, lying immediately under the skin, and that furnished with such a power of contraction, together with such an elasticity in the false ribs, that this animal can creep into an hole where others, seemingly much less, cannot follow. The female is remarkable also for two distinct apertures, one for urine, the other for propagation. The male is equally observable for a peculiarity of confor-

* Buffon, vol. xx. p. 4.

mation; the musky smell is much stronger at one particular season of the year than any other; and the marks of the sex seem to appear and disappear in the same manner.

The ondatra in some measure resembles the beaver in its nature and disposition. They both live in society during winter; they both form houses of two feet and an half wide, in which they reside several families together. In these they do not assemble to sleep as the marmot, but purely to shelter themselves from the rigour of the season. However, they do not lay up magazines of provision like the beaver; they only form a kind of covert way to and round their dwelling, from whence they issue to procure water and roots, upon which they subsist. During winter their houses are covered under a depth of eight or ten feet of snow; so that they must lead but a cold, gloomy, and a necessitous life, during its continuance. During summer they separate two by two, and feed upon the variety of roots and vegetables that the season offers. They then become extremely fat, and are much sought after, as well for their flesh as their skins which are very valuable. They then also acquire a very strong scent of musk, so pleasing to an European, but which the savages of Canada cannot abide. What we admire as a perfume they consider as a most abominable stench, and call one of their rivers, on the banks of which this animal is seen to burrow in numbers, by the name of the stinking river, as well as the rat itself which is denominated by them the stinkard. This is a strange diversity among mankind; and, perhaps, may be ascribed to the different kinds of food among dif-

The Canada Rat.

ferent nations. Such as chiefly feed upon rancid oils and putrid flesh will often mistake the nature of scents; and, having been long used to ill smells, will by habit consider them as perfumes. Be this as it will, although these nations of northern savages consider the musk rat as intolerably fœtid, they nevertheless regard it as very good eating; and, indeed, in this they imitate the epicures of Europe very exactly, whose taste seldom relishes a dish till the nose gives the strongest marks of disapprobation. As to the rest, this animal a good deal resembles the beaver in its habits and disposition; but, as its instincts are less powerful, and its œconomy less exact, I will reserve for the description of that animal a part of what may be applicable to this*.

The Cricetus.

THE Cricetus, or German Rat, which M. Buffon calls the Hamster, greatly resembles the water-rat in its size, small eyes, and the shortness of its tail. It differs in colour, being rather browner, like the Norway rat, with the belly and legs of a dirty yellow. But the marks by which it may be distinguished from all others are two pouches, like those of a baboon, on each side of its jaw, under the skin, into which it can cram a large quantity of provision. These bags are oblong, and of the size, when filled, of a large walnut. They open

[* The Hamster is of a pale reddish-brown colour above, and black underneath: it has three large oval white spots on each side in the fore part of the body.]

into the mouth, and fall back along the neck to the shoulder. Into these the animal can thrust the surplus of those fruits or grains it gathers in the fields, such as wheat, peas, or acorns. When the immediate calls of hunger are satisfied, it then falls to filling these; and thus, loaded with two great bunches on each side of the jaw, it returns home to its hole to deposit the spoil as a store for the winter. The size, the fecundity, and the voraciousness of this animal render it one of the greatest pests in the countries where it is found, and every method is made use of to destroy it *.

But, although this animal is very noxious with

[* Among animals of this kind, which are furnished with pouches on each side the mouth, for the temporary reception of their food, an account is given in the fifth volume of the Linnean transactions, of a species which has these receptacles of a very extraordinary bulk. It is an inhabitant of Canada, and the individual from which the description was taken, was presented by some Indians to the Lady of Governor Prescot. Its size is that of the Norway rat, though of a more lengthened form. Its colour is a pale greyish-brown, paler beneath. The pouches attached to the cheeks are of a very large size, shaped somewhat like an egg, reach to the ground, and have the appearance of a pair of inflated bladders. Of its manners nothing as yet is known; but from its being furnished with these appendages to the cheeks, it may be concluded that it lays up stores of provision for the winter.

Mr. Pennant describes a rat inhabiting the southern parts of Russia, which is destitute of eyes, external ears, and tail. It burrows under the surface to a great extent, feeds on roots, and is perhaps the only known quadruped that is truly blind. The mole has eyes sufficiently perfect for its subterraneous habitation, though they are very small and deeply seated: but in this animal, there are merely the rudiments of a pair of eyes, smaller than poppy-seeds, and covered with a real skin. From its never, in a state of nature, appearing above ground, it is probable that the sense of smell to direct it to its proper food, was all that appeared necessary for the perfection of its kind.]

respect to man, yet, considered with regard to those instincts which conduce to its own support and convenience, it deserves our admiration *. Its hole offers a very curious object for contemplation, and shews a degree of skill superior to the rest of the rat kind. It consists of a variety of apartments fitted up for the different occasions of the little inhabitant. It is generally made on an inclining ground, and always has two entrances, one perpendicular, and the other oblique; though, if there be more than one in a family, there are as many perpendicular holes as there are individuals below. The perpendicular hole is usually that through which they go in and out; the oblique serves to give a thorough air to keep the retreat clean, and, in case one hole is stopped, to give an exit at this. Within about a foot of the perpendicular hole the animal makes two more, where are deposited the family's provisions. These are much more spacious than the former, and are large in proportion to the quantity of the store. Beside these, there is still another apartment warmly lined with grass and straw, where the female brings forth her young; all these communicate with each other, and all together take up a space of ten or twelve feet in diameter. These animals furnish their storehouses with dry corn well cleaned; they also lay in corn in the ear, and beans and peas in the pod. These, when occasion requires, they afterwards separate, carrying out the pods and empty ears by their oblique passage. They usually begin to lay in at the latter end of August; and, as each magazine is filled, they carefully cover up the mouth with earth, and that so

* Buffon, vol. xxvi. p. 159.

neatly that it is no easy matter to discover where the earth has been removed. The only means of finding out their retreats are, therefore, to observe the oblique entrance, which generally has a small quantity of earth before it; and this, though often several yards from their perpendicular retreat, leads those who are skilled in the search to make the discovery. Many German peasants are known to make a livelihood by finding out and bringing off their hoards, which, in a fruitful season, often furnish two bushels of good grain in each apartment.

Like most others of the rat kind, they produce twice or thrice a year, and bring five or six at a time. Some years they appear in alarming numbers, at other times they are not so plenty. The moist seasons assist their propagation; and it often happens on such years that their devastations produce a famine all over the country. Happily, however, for mankind, these, like the rest of their kind, destroy each other; and of two that M. Buffon kept in a cage, male and female, the latter killed and devoured the former. As to the rest, their fur is considered as very valuable; the natives are invited by rewards to destroy them; and the weasel kind seconds the wishes of government with great success. Although they are usually found brown on the back and white on the belly, yet many of them are observed to be grey, which may probably arise from the difference of age.

The Leming.

HAVING considered various kinds of these noxious little animals that elude the indignation of

The Duck-billed Platypus.

mankind, and subsist by their number, not their strength, we come to a species more bold, more dangerous, and more numerous than any of the former. The Leming, which is a native of Scandinavia, is often seen to pour down in myriads from the northern mountains, and, like a pestilence, destroy all the productions of the earth. It is described as being larger than a dormouse, with a bushy tail, though shorter. It is covered with thin hair of various colours. The extremity of the upper part of the head is black, as are likewise the neck and shoulders, but the rest of the body is reddish, intermixed with small black spots of various figures, as far as the tail, which is not above half an inch long. The eyes are little and black, the ears round and inclining towards the back, the legs before are short, and those behind longer, which gives it a great degree of swiftness. But what it is much more remarkable for than its figure are, its amazing fecundity and extraordinary migrations.

In wet seasons, all of the rat kind are known to propagate more than in dry; but this species in particular is so assisted in multiplying by the moisture of the weather, that the inhabitants of Lapland sincerely believe that they drop from the clouds, and that the same magazines that furnish hail and snow pour the leming also upon them. In fact, after long rain, these animals set forward from their native mountains, and several millions in a troop deluge the whole plain with their numbers*. They move, for the most part in a square, marching forward by night, and lying still by day. Thus, like an animated torrent, they are often seen more th

* Phil. Trans. vol. ii. p. 872.

a mile broad covering the ground, and that so thick that the hindmost touches its leader. It is in vain that the poor inhabitant resists or attempts to stop their progress, they still keep moving forward; and, though thousands are destroyed, myriads are seen to succeed, and make their destruction impracticable. They generally move in lines, which are about three feet from each other, and exactly parallel. Their march is always directed from the north-west to the south east, and regularly conducted from the beginning. Wherever their motions are turned, nothing can stop them; they go directly forward, impelled by some strange power; and from the time they first set out, they never once think of retreating. If a lake or a river happens to interrupt their progress, they all together take the water and swim over it; a fire, a deep well, or a torrent, does not turn them out of their straight-lined direction; they boldly plunge into the flames, or leap down the well, and are sometimes seen climbing up on the other side. If they are interrupted by a boat across a river while they are swimming, they never attempt to swim round it, but mount directly up its sides; and the boat-men, who know how vain resistance in such a case would be, calmly suffer the living torrent to pass over, which it does without further damage. If they meet with a stack of hay or corn that interrupts their passage, instead of going over it they gnaw their way through; if they are stopped by a house in their course, if they cannot get through it, they continue there till they die. It is happy, however, for mankind, that they eat nothing that is prepared for human subsistence; they never enter an house to destroy the provisions,

but are contented with eating every root and vegetable that they meet. If they happen to pass through a meadow, they destroy it in a very short time, and give it an appearance of being burnt up and strewed with ashes. If they are interrupted in their course, and a man should imprudently venture to attack one of them, the little animal is no way intimidated by the disparity of strength, but furiously flies up at its opponent, and barking somewhat like a puppy, wherever it fastens does not easily quit the hold. If at last the leader be forced out of its line, which it defends as long as it can, and be separated from the rest of its kind, it sets up a plaintive cry different from that of anger, and, as some pretend to say, gives itself a voluntary death, by hanging itself on the fork of a tree.

An enemy so numerous and destructive would quickly render the countries where they appear utterly uninhabitable, did it not fortunately happen that the same rapacity that animates them to destroy the labours of mankind, at last impels them to destroy and devour each other*. After committing incredible devastations, they are at last seen to separate into two armies, opposed with deadly hatred, along the coasts of the larger lakes and rivers. The Laplanders, who observe them thus drawn up to fight, instead of considering their mutual animosities as an happy riddance of the most dreadful pest, form ominous prognostics from the manner of their arrangement. They consider their combats as a presage of war, and expect an invasion from the Russians or the Swedes, as the sides

* Dictionnaire Raisonnée, vol. ii. p. 610.

next those kingdoms happen to conquer. The two divisions, however, continue their engagements and animosity until one party overcomes the other. From that time they utterly disappear, nor is it well known what becomes of either the conquerors or the conquered. Some suppose that they rush headlong into the sea; others that they kill themselves, as some are found hanging on the forked branches of a tree; and others still that they are destroyed by the young spring herbage. But the most probable opinion is, that, having devoured the vegetable productions of the country, and having nothing more to subsist on, they then fall to devouring each other; and, having habituated themselves to that kind of food, continue it. However this be, they are often found dead by thousands, and their carcases have been known to infect the air for several miles round, so as to produce very malignant disorders. They seem also to infect the plants they have gnawed, for the cattle often die that afterward feed in the places where they passed.

As to the rest, the male is larger and more beautifully spotted than the female. They are extremely prolific; and, what is extraordinary, their breeding does not hinder their march; for some of them have been observed to carry one young one in their mouth and another on their back. They are greatly preyed upon by the ermine, and, as we are told, even by the rein-deer. The Swedes and Norwegians, who live by husbandry, consider an invasion from these vermin as a terrible visitation; but it is very different with respect to the Laplanders, who lead a vagrant life,

De Seve del.   Warner sc.

The Mole.

and who, like the lemings themselves, if their provisions be destroyed in one part of the country, can easily retire to another. These are never so happy as when an army of lemings come down amongst them; for then they feast upon their flesh; which though horrid food, and which, though even dogs and cats are known to detest, these little savages esteem very good eating, and devour greedily. They are glad of their arrival also upon another account, for they always expect a great plenty of game the year following, among those fields which the lemings have destroyed.

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*The Mole**.

TO these minute animals of the rat kind, a great part of whose lives is past in holes under ground, I will subjoin one little animal more, no way resembling the rat, except that its whole life is spent there. As we have seen some quadrupeds formed to crop the surface of the fields, and others to live upon the tops of trees, so the Mole is formed to live wholly under the earth, as if Nature meant that no place should be left wholly untenanted. Were we from our own sensations to pronounce upon the life of a quadruped that was never to appear above ground,

[* Moles have six unequal front-teeth in the upper jaw, and eight in the lower: in both jaws on each side is a single canine tooth, the upper ones of which are longer: there are seven grinders in the upper jaw, and six in the lower. There are seven species, of which the most remarkable is the radiated mole of North America: like the radiated shrew just described, its upper jaw is lengthened out, and furnished at the end with a circular row of tendrils. Its habits are like all the rest of its kind.]

but always condemned to hunt for its prey underneath, obliged, whenever it removed from one place to another, to bore its way through a resisting body, we should be apt to assert that such an existence must be the most frightful and solitary in nature. However, in the present animal, though we find it condemned to all those seeming inconveniencies, we shall discover no signs of wretchedness or distress. No quadruped is fatter, none has a more sleek or glossy skin; and, though denied many advantages that most animals enjoy, it is more liberally possessed of others, which they have in a more scanty proportion.

This animal, so well known in England, is however, utterly a stranger in other places, and particularly in Ireland. For such, therefore, as have never seen it, a short description will be necessary. And, in the first place, though somewhat of a size between the rat and the mouse, it no way resembles either, being an animal entirely of a singular kind, and perfectly unlike any other quadruped whatever. It is bigger than a mouse, with a coat of fine, short, glossy, black hair. Its nose is long and pointed, resembling that of an hog, but much longer. Its eyes are so small that it is scarcely possible to discern them. Instead of ears it has only holes in the place. Its neck is so short that the head seems stuck upon the shoulders. The body is thick and round terminating by a very small short tail, and its legs also are so very short that the animal seems to lie flat on its belly. From under its belly, as it rests in this position, the four feet appear just as if they immediately grew out of the body. Thus the animal appears to us at

first view as a mass of flesh covered with a fine shining black skin, with a little head, and scarce any legs, eyes, or tail. On a closer inspection, however, two little black points may be discerned, that are its eyes. The ancients, and some of the moderns, were of opinion that the animal was utterly blind; but Derham, by the help of a microscope, plainly discovered all the parts of the eye that are known in other animals, such as the pupil, the vitreous and the crystalline humours. The fore legs appear very short and strong, and furnished with five claws to each. These are turned outwards and backwards, as the hands of a man when swimming. The hind legs are longer and weaker than the fore, being only used to assist its motions; whereas the others are continually employed in digging. The teeth are like those of a shrew-mouse, and there are five on both sides of the upper jaw, which stand out; but those behind are divided into points. The tongue is as large as the mouth will hold.

Such is the extraordinary figure and formation of this animal; which, if we compare with its manner of living, we shall find a manifest attention in Nature to adapt the one to the other*. As it is allotted a subterraneous abode, the seeming defects of its formation vanish, or rather are turned to its advantage. The breadth, strength, and shortness of the fore feet, which are inclined outwards, answer the purposes of digging, serving to throw back the earth with greater ease, and to pursue the worms and insects which are its prey:

* British Zoology.

had they been longer, the falling in of the earth would have prevented the quick repetition of its strokes in working; or have obliged it to make a larger hole, in order to give room for their exertion. The form of the body is not less admirably contrived for its way of life. The fore part is thick, and very muscular, giving great strength to the action of the fore feet, enabling it to dig its way with amazing force and rapidity, either to pursue its prey, or elude the search of the most active enemy. By its power of boring the earth, it quickly gets below the surface; and I have seen it, when let loose in the midst of a field, like the ghost on a theatre, instantly sink into the earth; and the most active labourer, with a spade, in vain attempted to pursue.

The smallness of its eyes, which induced the ancients to think it was blind, is, to this animal, a peculiar advantage. A small degree of vision is sufficient for a creature that is ever destined to live in darkness. A more extensive sight would only have served to shew the horrors of its prison, while Nature had denied it the means of an escape. Had this organ been larger, it would have been perpetually liable to injuries, by the falling of the earth into it; but Nature, to prevent that inconvenience, has not only made them very small, but very closely covered them with hair. Anatomists mention, beside these advantages, another that contributes to their security; namely, a certain muscle; by which the animal can draw back the eye whenever it is necessary or in danger.

As the eye is thus perfectly fitted to the animal's situation, so also are the senses of hearing and smell-

ing. The first gives it notice of the most distant appearance of danger; the other directs it, in the midst of darkness, to its food. The wants of a subterraneous animal can be but few; and these are sufficient to supply them: to eat, and to produce its kind, are the whole employment of such a life; and for both these purposes it is wonderfully adapted by Nature*.

Thus admirably is this animal fitted for a life of darkness and solitude; with no appetites but what it can easily indulge, with no enemies but what it can easily evade or conquer. As soon as it has once buried itself in the earth, it seldom stirs out, unless forced by violent rains in summer, or when, in pursuit of its prey, it happens to come too near the surface, and thus gets into the open air, which may be considered as its unnatural element. In general, it chuses the looser softer grounds, beneath which it can travel with greater ease; in such also it generally finds the greatest number of worms and insects, upon which it chiefly preys. It is observed to be most active, and to cast up most earth, immediately before rain; and in winter, before a thaw: at those times the worms and insects begin to be in motion; and approach the surface, whither this industrious animal pursues them. On the contrary,

* Testes habet maximos, parastatas amplissimas, novum corpus seminale ab his diversum ac separatum. Penem etiam facile omnium, ni fallor, animalium longissimum, ex quibus colligere est maximam præ reliquis omnibus animalibus voluptatem in coitu, hoc abjectum et vile animalculum percipere, ut habeant quod ipsi invideant qui in hoc supremas vitæ suæ delicias collocant: Ray's Synops. Quadrup. p. 239. Huic opinioni assentitur D. Buffon, attamen non mihi apparet magnitudinem partium talem voluptatem augere. Maribus enim salacissimis contrarium obtinet.

in very dry weather, the mole seldom or never forms any hillocks; for then it is obliged to penetrate deeper after its prey, which at such seasons retire far into the ground.

As the moles very seldom come above ground *, they have but few enemies ; and very readily evade the pursuit of animals stronger and swifter than themselves. Their greatest calamity is an inundation; which, wherever it happens, they are seen, in numbers, attempting to save themselves by swimming, and using every effort to reach the higher grounds. The greatest part, however, perish, as well as their young, which remain in the holes behind. Were it not for such accidents, from their great fecundity, they would become extremely troublesome ; and as it is, in some places, they are considered by the farmer as his greatest pest. They couple towards the approach of spring; and their young are found about the beginning of May. They generally have four or five at a time; and it is easy to distinguish among other mole-hills, that in which the female has brought forth her young. These are made with much greater art than the rest, and are usually larger. The female, in order to form this retreat, begins by erecting the earth into a tolerably spacious apartment, which is supported within by partitions, at proper distances, that prevent the roof from falling. All round this she works, and beats the earth very firm, so as to make it capable of keeping out the rain let it be never so violent. As the hillock in which this apartment is thus formed, is raised above ground, the apartment itself is consequently above the level of the plain, and therefore

* Buffon.

less subject to accidental slight inundations. The place being thus fitted, she then procures grass and dry leaves, as a bed for her young. There they lie secure from wet, and she continues to make their retreat equally so from danger; for all round this hill of her own raising, are holes running into the earth, that part from the middle apartment, like rays from a centre, and extend about fifteen feet in every direction: these resemble so many walks or chaces, into which the animal makes her subterraneous excursions, and supplies her young with such roots or insects as she can provide: but they contribute still more to the general safety; for as the mole is very quick of hearing, the instant she perceives her little habitation attacked, she takes to her burrow, and unless the earth be dug away by several men at once, she and her young always make a good retreat.

The mole is scarcely found, except in cultivated countries: the varieties are but few. That which is found in Virginia, resembles the common mole, except in colour, which is black, mixed with a deep purple. There are sometimes white moles, seen particularly in Poland, rather larger than the former. As their skin is so very soft and beautiful, it is odd that it has not been turned to any advantage. Agricola tells us, that he saw hats made from it, the finest and the most beautiful that could be imagined.

[In the third volume of the Linnean transactions, a curious fact in the natural history of the mole, is recorded by Mr. Bruce.

" In visiting the Loch of Clunie, which I often did, I observed in it a small island at the distance

of a hundred and eighty yards from the land, measured to be so upon the ice. Upon the island Lord Airley, the proprietor, has a castle and small shrubbery. I observed frequently the appearance of fresh mole-casts or hills. I for some time took it to be the water mouse, and one day asked the gardener if it was so. No, he said, it was the mole; and that he had caught one or two lately. But that five or six years ago he had caught two in traps; and for two years after this he had observed none. But about four years ago, coming ashore in a summer's evening in the dusk, the fourth or fifth of June, P. M. he and another respectable person, Lord Airly's butler, saw at a small distance upon the smooth water some animal paddling to, and not far distant from the island. They soon, too soon! closed with this feeble passenger, and found it to be our common mole, led by a most astonishing instinct, from the nearest point of land, (the castle hill) to take possession of this desert island. It was at this time, for about the space of two years, quite free from any subterraneous inhabitant: but the mole has, for more than a year past, made its appearance again, and its operations I was witness to."

The depth of the water, both in winter and summer, is from six to ten, fifteen, and in some places as deep as thirty or forty feet, all round the island.]

De Seve del.

Warner sc.

The Hedge Hog.

1. *without the Bristles.*

CHAP. V.

Of Animals of the Hedge-hog, or prickly Kind.*

ANIMALS of the Hedge-hog kind require but very little accuracy to distinguish them from all others. That hair which serves the generality of quadrupeds for warmth and ornament, is partly wanting in these; while its place is supplied by sharp spines or prickles, that serve for their defence. This general characteristic, therefore, makes a much more obvious distinction than any that can be taken from their teeth or their claws. Nature, by this extraordinary peculiarity, seems to have separated them in a very distinguished manner; so that instead of classing the hedge-hog among the moles, or the porcupine with the hare, as some have done,

[* Hedge-hogs have two front teeth in each jaw; those of the upper jaw are distant from each other, those of the lower are placed near together: the canine teeth are five on each side in the upper jaw, and three in the lower: there are four grinders each side both above and below; and the body is clothed on the upper parts with sharp spines. There are seven species, of which only the common Hedge-hog is found in Europe. The Guiana Hedge-hog has its spines shorter, thicker, and stronger; is of a very pale colour; and has not the least appearance of external ears. The Hedge-hog of Siberia has long, oval, naked ears edged with brown; and the nostrils are crested. The Tanrec of Madagascar has five longitudinal bands of black and white on the body; the black parts being covered with hard hair, and the white parts with spines. The Malacca Hedge-hog has very long spines, and long pendulous ears: from this was procured the Bezoaric concretion, formerly so highly valued in medicine, called the Bezoar Hystricis or Lapis porcinus.]

it is much more natural and obvious to place them, and others approaching them in this strange peculiarity, in a class by themselves: nor let it be supposed, that while I thus alter their arrangement, and separate them from animals with which they have been formerly combined, that I am destroying any secret affinities that exist in nature. It is natural, indeed, for readers to suppose, when they see two such opposite animals as the hare and the porcupine assembled together in the same group, that there must be some material reason, some secret connexion, for thus joining animals so little resembling each other in appearance. But the reasons for this union were very slight, and merely arose from a similitude in the fore-teeth: no likeness in the internal conformation; no similitude in nature, in habitudes, or disposition; in short, nothing to fasten the link that combines them, but the similitude in the teeth: this, therefore, may be easily dispensed with; and, as was said, it will be most proper to class them according to their most striking similitudes.

The Hedge-hog, with an appearance the most formidable, is yet one of the most harmless animals in the world: unable or unwilling to offend, all its precautions are only directed to its own security; and it is armed with a thousand points, to keep off the enemy, but not to invade him. While other creatures trust to their force, their cunning, or their swiftness, this animal, destitute of all, has but one expedient for safety; and from this alone it often finds protection. As soon as it perceives itself attacked, it withdraws all its vulnerable parts, rolls itself into a ball, and presents nothing but its de-

fensive thorns to the enemy; thus, while it attempts to injure no other quadruped, they are equally incapable of injuring it: like those knights, we have somewhere read of, who were armed in such a manner, that they could neither conquer others, nor be themselves overcome.

This animal is of two kinds; one with a nose like the snout of an hog; the other, more short and blunt, like that of a dog. That with the muzzle of a dog is the most common, being about six inches in length, from the tip of the nose to the insertion of the tail. The tail is little more than an inch long; and so concealed by the spines, as to be scarcely visible: the head, back, and sides, are covered with prickles; the nose, breast, and belly, are covered with fine soft hair*; the legs are short, of a dusky colour, and almost bare; the toes on each foot are five in number, long and separated; the prickles are about an inch in length, and very sharp-pointed; their lower part is white, the middle black, and the points white: the eyes are small, and placed high in the head; the ears are round, pretty large, and naked; the mouth is small, but well furnished with teeth; these, however, it only uses in chewing its food, but neither in attacking or defending itself against other animals. Its only reliance in cases of danger, is on its spines; the instant it perceives an enemy, it puts itself into a posture of defence, and keeps upon its guard until it supposes the danger over. On such occasions, it immediately alters its whole appearance: from its usual form, somewhat resembling a small animal,

* Præputium propendens. Linnæi Syst. 75. And of the female, he might have said, resupina copulatur.

with a bunch on its back, the animal begins to bend its back, to lay its head upon its breast, to shut its eyes, to roll down the skin of its sides towards the legs, to draw these up, and, lastly, to tuck them in on every side, by drawing the skin still closer. In this form, which the hedge-hog always puts on when disturbed, it no way resembles an animal, but rather a roundish mass of prickles, impervious on every side. The shape of the animal thus rolled up, somewhat resembles a chesnut in the husk; there being, on one side, a kind of flat space, which is that on which the head and legs have been tucked in.

Such is the usual appearance of the hedge-hog, upon the approach of any danger. Thus rolled up in a lump, it patiently waits till its enemy passes by, or is fatigued with fruitless attempts to annoy it. The cat, the weasel, the ferret, and the martin, quickly decline the combat; and the dog himself generally spends his time in empty menaces, rather than in effectual efforts. Every increase of danger only increases the animal's precautions to keep on its guard; its assailant vainly attempts to bite, since he thus more frequently feels than inflicts a wound; he stands enraged and barking, and rolls it along with his paws; still, however, the hedge-hog patiently submits to every indignity, but continues secure; and still more to disgust its enemy with the contest, sheds its urine, the smell of which is alone sufficient to send him away. In this manner the dog, after barking for some time, leaves the hedge-hog where he found him; who perceiving the danger past, at length peeps out from its ball,

and, if not interrupted, creeps slowly to its retreat.

The hedge-hog, like most other wild animals, sleeps by day, and ventures out by night. It generally resides in small thickets, in hedges, or in ditches covered with bushes; there it makes an hole of about six or eight inches deep, and lies well wrapped up, in moss, grass, or leaves. Its food is roots, fruits, worms, and insects. It is also said to suck cattle, and hurt their udders; but the smallness of its mouth will serve to clear it from this reproach. It is said also to be very hurtful in gardens and orchards, where it will roll itself in an heap of fruit, and so carry a large quantity away upon its prickles; but this imputation is as ill grounded as the former, since the spines are so disposed, that no fruit will stick upon them, even if we should try to fix them on. It rather appears to be a very serviceable animal, in ridding our fields of insects and worms, which are so prejudicial to vegetation.

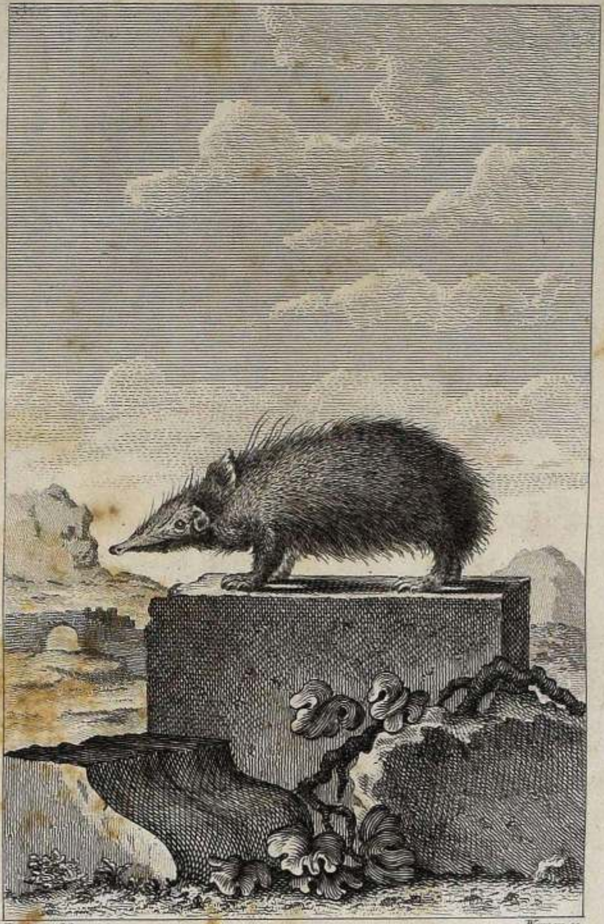
M. Buffon, who kept these animals tame about his house, acquits them of the reproach of being mischievous in the garden; but then he accuses them of tricks, of which from the form and habits of this animal, one would be never led to suspect them. "I have often," says he, "had the female and her young brought me about the beginning of June: they are generally from three to five in number: they are white in the beginning, and only the marks of their spines appear: I was willing to rear some of them, and accordingly put the dam and her young into a tub, with abundant provision beside them; but the old animal, instead of suck-

ling her young, devoured them all, one after another. On another occasion, an hedge-hog that had made its way into the kitchen, discovered a little pot, in which there was meat prepared for boiling; the mischievous animal drew out the meat, and left its excrements in the stead. I kept males and females in the same apartment, where they lived together, but never coupled. I permitted several of them to go about my garden; they did very little damage, and it was scarcely perceivable that they were there: they lived upon the fruits that fell from the trees; they dug the earth into shallow holes; they eat caterpillars, beetles, and worms; they were also very fond of flesh, which they devoured boiled or raw."

They couple in spring, and bring forth about the beginning of summer. They sleep during the winter, and what is said of their laying up provisions for that season, is consequently false. They at no time eat much, and can remain very long without any food whatsoever. Their blood is cold, like all other animals that sleep during the winter. Their flesh is not good for food; and their skins are converted to scarcely any use, except to muzzle calves, to keep them from sucking.

The Tanrec and Tendrac.

THE Tanrec and Tendrac, are two little animals, described by M. Buffon, of the hedge-hog kind; but yet sufficiently different from it to constitute a different species. Like the hedge-hog, they are covered with prickles, though mixed in a greater



De Seve del.

Warner sc.

The Tanrec.

proportion with hair; but, unlike that animal, they do not defend themselves by rolling up in a ball. Their wanting this last property is alone sufficient to distinguish them from an animal in which it makes the most striking peculiarity: as also, that in the East Indies, where only they are found, the hedge-hog exists separately also: a manifest proof that this animal is not a variety caused by the climate.

The Tanrec is much less than the hedge-hog*, being about the size of a mole, and covered with prickles, like that animal, except that they are shorter and smaller. The Tendrac is still less than the former, and is defended only with prickles upon the head, the neck and the shoulders, the rest being covered with a coarse hair, resembling an hog's bristles. These little animals, whose legs are very short, move but slowly. They grunt like an hog; and wallow, like it, in the mire. They love to be near water and spend more of their time there than upon land. They are chiefly in creeks and harbours of salt water. They multiply in great numbers, make themselves holes in the ground, and sleep for several months. During this torpid state their hairs (and I should also suppose their prickles) fall; and they are renewed upon their revival. They are usually very fat; and although their flesh be insipid, soft, and stringy, yet the Indians find it to their taste, and consider it as a very great delicacy.

* Buffon, vol. xxv. p. 254.

The Porcupine *.

THOSE arms which the hedge-hog possesses in miniature, the Porcupine has in a more enlarged degree. The short prickles of the hedge-hog are in this animal converted into shafts. In the one the spines are about an inch long; in the other, a foot. The porcupine is about two feet long, and fifteen inches high. Like the hedge-hog, it appears a mass of mishapen flesh, covered with quills, from ten to fourteen inches long, resembling the barrel of a goose-quill in thickness; but tapering and sharp at both ends. These, whether considered separately

[* The Porcupine has two front teeth in each jaw, which are cut obliquely; and eight grinders each side in both jaws: there are four toes on the fore feet, and five on the hinder: the body is covered with spines intermixed with hair. There are five species besides the common porcupine. The American porcupine is remarkable for having the lower part of its tail destitute of spines, and which it can curl round the branches of trees and suspend itself by, in the manner of some of the opossums and monkies. It climbs trees, and feeds not only upon fruits, but on birds also. The Mexican porcupine resembles the last, but is of a much larger size, and does not hang by the tail. The iridescent porcupine, inhabiting the islands of the Indian Archipelago, is clothed with small needle-like bristles, having the singular property of exhibiting changeable colours according to the different directions of the light; being either a gilded green, or of a reddish hue. The tail is tufted at the tip with a thick brush of quills, each swelling out into knots at intervals, and tipt with a similar knot: this tuft is of a silvery white colour. The Malacca porcupine is distinguished by having the tail naked and scaly, except the tip, which is covered with a tuft of flattened bristles resembling small strips of parchment. The Canada porcupine is a thick clumsy animal, somewhat resembling the beaver, clothed all over with a very thick soft fur, in which lie scattered short spines almost covered with the fur.]

De Sève del. Warner sc.

The Porcupine.

or together, afforded sufficient subject to detain curiosity. Each quill is thickest in the middle; and inserted into the animal's skin, in the same manner as feathers are found to grow upon birds. It is within side spongy, like the top of a goose-quill; and of different colours, being white and black alternately, from one end to the other. The biggest are often found fifteen inches long, and a quarter of an inch in diameter; extremely sharp, and capable of inflicting a mortal wound. They seem harder than common quills, being difficult to be cut, and solid at that end which is not fixed in the skin. If we examine them in common, as they grow upon the animal, they appear of two kinds; the one such as I have already described; the other, long, flexible and slender, growing here and there among the former. There is still another sort of quills, that grow near the tail, white and transparent, like writing quills, and that seem to be cut short at the end. All these quills, of whatsoever kind, incline backwards, like the bristles of an hog; but when the animal is irritated, they rise and stand upright, as bristles are seen to do*.

[* Professor Thunberg in his second journey to the island Mature in the Indian ocean, informs us, that the porcupine has a very curious method of fetching water for its young. The quills in the tail are said to be hollow, and to have a hole at the extremity: these the animal can bend in such a manner, as that they can be filled with water, which is afterwards discharged in the nest among its young. In its stomach are frequently found Bezoar stones, which here, scraped to a fine powder, are administered in all kinds of disorders. These stones consist of very fine hair, which has concreted with the juices of the stomach, and have one layer over the other; so that they are composed of several rings of different colours. I have seen them of the size of a hen's egg, most com-

Such is the formation of this quadruped, in those parts in which it differs from most others; as to the rest of its figure, the muzzle bears some resemblance to that of an hare, but black; the legs are very short, and the feet have five toes, both before and behind; and these, as well as the belly, the head, and all other parts of the body, are covered with a sort of short hair, like prickles, there being no part, except the ears and the sole of the foot, that is free from them; the ears are thinly covered with very fine hair; and are in shape like those of mankind: the eyes are small, like those of an hog, being only one-third of an inch from one corner to the other. After the skin is taken off, there appear a kind of paps on those parts of the body from whence the large quills proceed; these are about the size of a small pea, each answering to as many holes which appear on the outward surface of the skin, and which are about half an inch deep, like as many hollow pipes, wherein the quills are fixed, as in so many sheaths.

This animal seems to partake very much of the nature of the hedge-hog; having this formidable apparatus of arms rather to defend itself, than annoy the enemy. There have been, indeed, many naturalists who supposed that it was capable of discharging them at its foes, and killing at a great distance off. But this opinion has been entirely discredited of late; and it is now universally believed that its quills remain firmly fixed in the skin, and are then only shed when the animal moults them, as

monly blunt at the end; but one I had an opportunity of seeing, was as large as a goose's egg, perfectly globular, and all over brown.]

birds do their feathers. It is true we are told by Ellis, that a wolf at Hudson's Bay was found dead, with the quills of a porcupine fixed within its mouth; which might have very well happened, from the voraciousness of the former, and not the resentment of the latter. That rapacious creature, in the rage of appetite, might have attempted to devour the porcupine, quills and all, and very probably paid the forfeit, by its life. However this be, of all the porcupines that have been brought into Europe, not one was ever seen to launch their quills; and yet the irritations they received were sufficient to have provoked their utmost indignation. Of all the porcupines that Doctor Shaw observed in Africa, and he saw numbers, not one ever attempted to dart its quills; their usual manner of defence being, to lie on one side, and when the enemy approaches very near, by suddenly rising, to wound him with the points on the other*.

It is probable, therefore, that the porcupine is seldom the aggressor; and when attacked by the bolder animals, it only directs its quills so as to keep always pointing towards the enemy. These are an ample protection; and, as we are assured by Kolben, at such times even the lion himself will not venture to make an attack. From such, there-

[* M. de Vaillant in his travels says, that owing to some pernicious quality in the quills, one of his Hottentots, who had received a wound in his leg from a porcupine, was ill for more than six months. He also informs us, that a gentleman at the Cape, in teizing one of these animals, received a wound in his leg, which nearly occasioned his loss of the limb; and notwithstanding every possible care, he suffered severely from it for more than four months, one of which he was confined to his bed.]

fore, the porcupine can defend itself; and chiefly hunts for serpents, and all other reptiles, for subsistence. Travellers universally assure us that, between the serpent and the porcupine, there exists an irreconcileable enmity, and that they never meet without a mortal engagement*. The porcupine, on these occasions, is said to roll itself upon the serpent, and thus destroy and devour it. This may be true; while what we are informed by Monsieur Sarrasin, of the porcupine of Canada chiefly subsisting on vegetables, may be equally so. Those which are brought to this country to be shewn, are usually fed on bread, milk, and fruits; but they will not refuse meat when it is offered them; and it is probable, they prefer it in a wild state, when it is to be had†. The porcupine is also known to be extremely hurtful to gardens; and, where it enters, does incredible damage.

The Americans, who hunt this animal, assure us, that the porcupine lives from twelve to fifteen years. During the time of coupling, which is in the month of September, the males become very fierce and dangerous, and often are seen to destroy each other with their teeth. The female goes with young seven months, and brings forth but one at a time; this she suckles but about a month, and accustoms it betimes to live, like herself, upon vegetables and the bark of trees; she is very fierce in its defence; but, at other seasons, she is fearful, timid, and harmless. The porcupine never attempts to bite, nor any way to injure its pursuers: if hunted by a

* Bosman. Smith. L. P. Vincent Marie, &c.

† Buffon.

dog or a wolf, it instantly climbs up a tree, and continues there until it has wearied out the patience of its adversary; the wolf knows by experience how fruitless it would be to wait, he therefore leaves the porcupine above, and seeks out for a new adventure.

The porcupine does not escape so well from the Indian hunter, who eagerly pursues it, in order to make embroidery of its quills, and to eat its flesh. This, as we are commonly told, is very tolerable eating; however, we may expect wretched provisions when the savages are to be our caterers, for they eat every thing that has life. But they are very ingenious with regard to their embroidery: if I understand the accounts rightly, they dye the quills of various colours, and then splitting them into slips, as we see in the making of a cane chair, they embroider, with these, their belts, baskets, and several other necessary pieces of furniture.

As to the rest, there are many things related concerning this animal that are fabulous; but there are still many circumstances more, that yet remain to be known. It were curious to enquire whether this animal molts its quills when wild, for it is never seen to shed them in a domestic state; whether it sleeps all the winter, as we are told by some naturalist, which we are sure it does not when brought into our country; and, lastly, whether its quills can be sent off with a shake; for no less a naturalist than Reaumer was of that opinion *.

[* It is probable that this animal, like most of the Dormouse kind, sleeps in its subterraneous recess during the winter. Mr. Bewick, in his history of this quadruped says, that upon the smallest irritation it raises its quills, and shakes them with great

All that we can learn of an animal exposed as a shew, or even by its dissection, is but merely its conformation; and that makes one of the least interesting parts of its history. We are naturally led, when presented with an extraordinary creature, to expect something extraordinary in its way of living, something uncommon, and corresponding with its figure; but of this animal we know little with any precision, except what it offers in a state of captivity. In such a situation, that which I saw appeared to very little advantage: it was extremely dull and torpid, though very wakeful; and extremely voracious, though very capable of sustaining hunger; as averse to any attachment, as to being tamed: it was kept in an iron cage, and the touching one of the bars was sufficient to excite its resentment, for its quills were instantly erected; and the poet was right in his epithet of fretful, for it appeared to me the most irascible creature upon earth.

The porcupines of America differ very much from that of the ancient continent, which we have been describing; and strictly speaking, may be considered as animals of a different species: however, from their being covered with quills, we will only add them as varieties of the former, since we know

violence, directing them to that quarter from whence it is in danger of being attacked, and striking at the object of its resentment at the same time. "We have observed, on an occasion of this sort, at a time when the animal was moulting or casting its quills, that they would fly out to the distance of a few yards, with such force as to bend the points of them against the board where they struck; and it is not improbable that a circumstance of this kind, may have given rise to an opinion of its power to use them in a more effectual manner.]

very little concerning them, except their difference of figure. They are of two kinds; the one called the Couando; and the other, first named by M. Buffon, the Urson; the one a native of the northern parts of America, the other of the south; and both differing from the former, in having long tails, whereas that has a very short one.

The Couando is much less than the porcupine; its quills are four times shorter, its snout more unlike that of an hare; its tail is long enough to catch by the branches of trees, and hold by them. It may be easily tamed, and is to be found chiefly in the southern parts of America; yet is not wanting also in the northern.

The Urson, which M. Buffon calls after our countryman Hudson, is a native of Hudson's Bay. The make of the body of this animal is not so round as that of the two former, but somewhat resembling the shape of a pig. It is covered with long bristly hair, with a shorter hair underneath; and under this the quills lie concealed very thick; they are white, with a brown point, and bearded, and the longest do not exceed four inches; they stick to the hand when the animal is stroked on the back; and likewise, when the hand is taken away, they stick so fast as to follow it. They make their nest under the roots of great trees, sleep very much, and chiefly feed upon the bark of the juniper. In winter the snow serves them for drink; and in summer they lap water, like a dog. They are very common in the country lying to the east of Hudson's Bay; and several of the trading Americans depend on them for food, at some seasons of the year.

CHAP. VI.

Of Quadrupeds covered with Scales or Shells instead of Hair *.

WHEN we talk of a quadruped, the name seems to imply an animal covered with hair; when we mention a bird, it is natural to conceive a creature covered with feathers; when we hear of a fish, its scales are generally the first part that strikes our imagination. Nature, however, owns none of our distinctions; various in all her operations, she mixes her plans, groupes her pictures, and excites our wonder as well by her general laws as by her deviations. Quadrupeds, which we have considered as making the first general class in animated nature, and next to man the most dignified tenants of the earth, are yet in many respects related to the classes beneath them, and do not in every respect preserve their usual distinctions. Their first character, which consists in having four feet, is common to the lizard kind as well as to them. The second prerogative, which is that of bringing forth living young, is found in the cetaceous tribe of fishes, and also in insects without number. Their third and last attribute, which seems more general and constant than the former, that of being covered with hair, is yet found in various other animals, and is deficient in quadrupeds themselves. Thus we must be cautious of judging of the nature of animals from

* This chapter is chiefly extracted from M. Buffon, which I mention at once, to save the trouble of repeated quotation.

one single character, which is always found incomplete; for it oftens happens that three or four of the most general characters will not suffice. It must be by a general enumeration of the parts that we can determine precisely of the works of the creation; and instead of definitions, learn to describe. Had this method been followed, much of the disgust and the intricacy of history might have been avoided, and that time, which is now employed in combating error, laid out in the promoting of science.

Were we to judge of Nature from definitions only, we should never be induced to suppose that there existed races of viviparous quadrupeds destitute of hair, and furnished with scales and shells in their stead. However, Nature, every way various, supplies us with many instances of these extraordinary creatures; the old world has its quadrupeds covered with scales, and the new with a shell. In both they resemble each other, as well in the strangeness of their appetites, as in their aukward conformation. Like animals but partially made up, and partaking of different natures, they want those instincts which animals, formed but for one element alone, are found to possess. They seem to be a kind of strangers in nature, creatures taken from some other element, and capriciously thrown to find a precarious subsistence upon land*.

[* The Pangolin or Manis, and the Ant-eaters, appear to form one natural family. In their appearance and manners they are extremely alike, all of them living entirely upon insects. They have no teeth, instead of which are certain bones, deeply situated in the mouth: their tongue is long, worm-like, capable of being suddenly darted forwards, and covered with a glutinous moisture; and is the only instrument by which they catch their food: their

The Pangolin, which has been usually called the Scaly Lizard, M. Buffon very judiciously restores to that denomination by which it is known in the countries where it is found. The calling it a lizard, he justly observes, might be apt to produce error, and occasion its being confounded with an animal which it resembles only in its general form, and in its being covered with scales. The lizard may be considered as a reptile, produced from an egg; the pangolin is a quadruped, and brought forth alive, and perfectly formed. The lizard is all over covered with the marks of scales; the pangolin has scales neither on the throat, the breast, or the belly. The scales of the lizard seem stuck upon the body even closer than those of fishes; the scales of the pangolin are only fixed at one end, and capable of being erected, like those of the porcupine, at the will of the animal. The lizard is a defenceless creature; the pangolin can roll itself into a ball, like the hedge-hog, and present the points of its scales to the enemy, which effectually defend it.

The pangolin, which is a native of the torrid climates of the ancient continent, is of all other animals the best protected from external injury by Nature. It is about three or four feet long, or, taking in the tail, from six to eight. Like the lizard, it has a small head, a very long nose, a short thick neck, a long body, legs very short, and a tail extremely long, thick at the insertion, and terminating in a point. It has no teeth, but is armed with

mouth is elongated, and narrowed into a kind of tube: and the body is clothed with hair, as in the common Ant-eater; or coated with scales, as in the Pangolin; or covered with sharp spines, as in the aculeated Ant-eater of New Holland. They have from three to five toes on the feet.

De Sere del. Warner sc.

The Pangolin.

five toes on each foot, with long white claws. But what it is chiefly distinguished by is its scaly covering, which in some measure hides all the proportions of its body. These scales defend the animal on all parts, except the under part of the head and neck, under the shoulders, the breast, the belly, and the inner side of the legs; all which parts are covered with a smooth soft skin, without hair. Between the shells of this animal, at all the interstices, are seen hairs like bristles, brown at the extremity, and yellow towards the root. The scales of this extraordinary creature are of different sizes and different forms, and stuck upon the body somewhat like the leaves of an artichoke. The largest are found near the tail, which is covered with them like the rest of the body. These are above three inches broad, and about two inches long, thick in the middle, and sharp at the edges, and terminated in a roundish point. They are extremely hard, and their substance resembles that of horn. They are convex on the outside, and a little concave on the inner; one edge sticks in the skin, while the other laps over that immediately behind it. Those that cover the tail conform to the shape of that part, being of a dusky brown colour, and so hard, when the animal has acquired its full growth, as to turn a musquet-ball.

Thus armed, this animal fears nothing from the efforts of all other creatures, except man. The instant it perceives the approach of an enemy, it rolls itself up like the hedge-hog, and presents no part but the cutting edges of its scales to the assailant. Its long tail, which, at first view, might be thought easily separable, serves still more to increase the

animal's security. This is lapped round the rest of the body, and, being defended with shells even more cutting than any other part, the creature continues in perfect security. Its shells are so large, so thick, and so pointed, that they repel every animal of prey; they make a coat of armour that wounds while it resists, and at once protects and threatens. The most cruel, the most famished quadruped of the forest, the tiger, the panther, and the hyæna, make vain attempts to force it. They tread upon, they roll it about, but all to no purpose; the pangolin remains safe within, while its invader almost always feels the reward of its rashness. The fox often destroys the hedge-hog by pressing it with his weight, and thus obliges it to put forth its nose, which he instantly seizes, and soon after the whole body; but the scales of the pangolin effectually support it under any such weight, while nothing that the strongest animals are capable of doing can compel it to surrender. Man alone seems furnished with arms to conquer its obstinacy. The Negroes of Africa, when they find it, beat it to death with clubs, and consider its flesh as a very great delicacy.

But although this animal be so formidable in its appearance, there cannot be a more harmless inoffensive creature when unmolested. It is even unqualified by Nature to injure larger animals, if it had the disposition, for it has no teeth. It should seem that the bony matter, which goes in other animals to supply the teeth, is exhausted in this in supplying the scales that go to the covering of its body. However this be, its life seems correspondent to its peculiar conformation. Incapable of

being carnivorous, since it has no teeth, nor of subsisting on vegetables, which require much chewing, it lives entirely upon insects, for which Nature has fitted it in a very extraordinary manner. As it has a long nose, so it may naturally be supposed to have a long tongue; but, to increase its length still more, it is doubled in the mouth, so that when extended it is shot out to above a quarter of a yard beyond the tip of the nose. This tongue is round, extremely red, and covered with an unctuous and slimy liquor, which gives it a shining hue. When the pangolin, therefore, approaches an ant-hill, for these are the insects on which it chiefly feeds, it lies down near it, concealing as much as possible the place of its retreat, and stretching out its long tongue among the ants, keeps it for some time quite immoveable. These little animals allured by its appearance, and the unctuous substance with which it is smeared, instantly gather upon it in great numbers; and when the pangolin supposes a sufficiency, it quickly withdraws the tongue, and swallows them at once. This peculiar manner of hunting for its prey is repeated either till it be satisfied, or till the ants, grown more cautious, will be allured to their destruction no longer. It is against these noxious insects, therefore, that its only force or cunning is exerted; and were the Negroes but sufficiently sensible of its utility in destroying one of the greatest pests to their country, they would not be so eager to kill it. But it is the nature of savage men to pursue the immediate good, without being solicitous about the more distant benefit they remove. They, therefore, hunt this animal, with the utmost avidity, for its flesh; and, as it is slow

and unable to escape in an open place, they seldom fail of destroying it. However, it chiefly keeps in the most obscure parts of the forest, and digs itself a retreat in the clefts of rocks, where it brings forth its young, so that it is but rarely met with, and continues a solitary species, and an extraordinary instance of the varying of nature.

Of this animal, there is a variety which is called the Phatagin, much less than the former, being not above a foot long from the head to the tail, with shells differently formed, with its belly, breast, and throat covered with hair, instead of a smooth skin as in the former; but that by which it is peculiarly distinguished is the extent of its tail, which is above twice the length of its body. Both are found in the warm latitudes of the East, as well as in Africa; and, as their numbers are but few, it is to be supposed their fecundity is not great.

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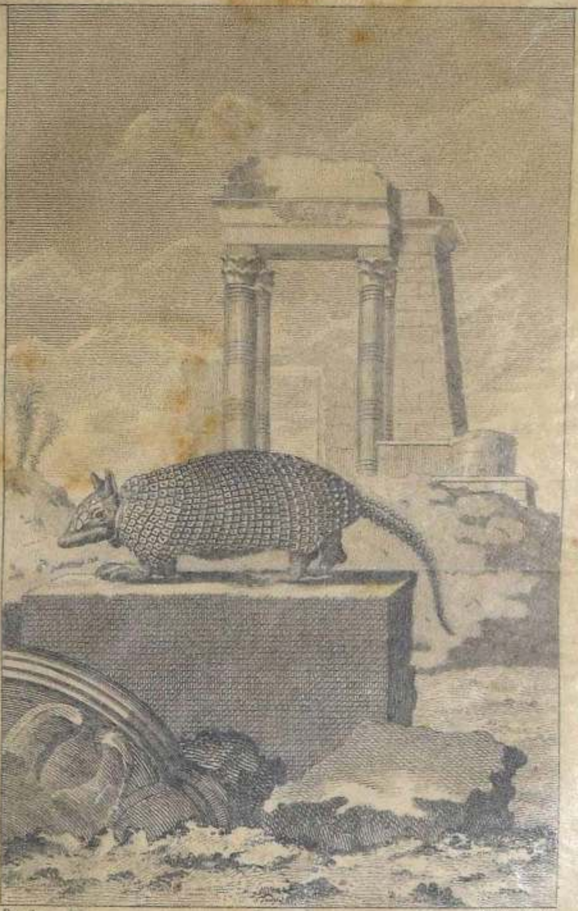
*The Armadillo or Tatou**.

HAVING mentioned quadrupeds of the ancient continent covered with scales, we come next to quadrupeds of the new continent covered with shells. It would seem that Nature had reserved all the wonders of her power for these remote and thinly inhabited countries, where the men are savage, and the quadrupeds various. It would seem that she becomes more extraordinary in proportion as she retires from human inspection. But the real fact is,

[* The animals of this tribe have several grinders, but no front or canine teeth in either jaw; their body is coated with a shelly kind of armour, divided into distinct zones or bands.]



De Sève del. Warner sc.

The Armadillo.

that wherever mankind are polished, or thickly planted, they soon rid the earth of these odd and half-formed productions, that in some measure encumber the soil. They soon disappear in a cultivated country, and continute to exist only in those remote deserts where they have no enemies but such as they are enabled to oppose.

The Armadillo is chiefly an inhabitant of South America; a peaceful harmless creature, incapable of offending any other quadruped, and furnished with a peculiar covering for its own defence. The pangolin, described above, seems an inactive helpless being, indebted for safety more to its patience than its power; but the armadillo is still more exposed and helpless. The pangolin is furnished with an armour that wounds while it resists, and that is never attacked with impunity; but the armadillo is obliged to submit to every insult, without any power of repelling its enemy; it is attacked without danger, and is consequently liable to more various persecutions.

This animal being covered, like a tortoise, with a shell, or rather a number of shells, its other proportions are not easily discerned. It appears, at first view, a round mis-shapen mass, with a long head, and a very large tail sticking out at either end, as if not of a piece with the rest of the body. It is of different sizes, from a foot to three feet long, and covered with a shell divided into several pieces, that lap over each other like the plates in a coat of armour, or in the tail of a lobster. The difference in the size of this animal, and also the different disposition and number of its plates, have been considered as constituting so many species, each marked

with its own particular name. In all, however, the animal is partially covered with this natural coat of mail; the conformation of which affords one of the most striking curiosities in natural history. This shell, which in every respect resembles a bony substance, covers the head, the neck, the back, the sides, the rump, and the tail to the very point. The only parts to which it does not extend are, the throat, the breast, and the belly, which are covered with a white soft skin, somewhat resembling that of a fowl stripped of its feathers. If these naked parts be observed with attention, they would be found covered with the rudiments of shells, of the same substance with those which cover the back. The skin, even in the parts that are softest, seems to have a tendency to ossify; but a complete ossification takes place only on those parts which have the least friction, and are the most exposed to the weather. The shell, which covers the upper part of the body, differs from that of the tortoise, in being composed of more pieces than one, which lie in bands over the body, and, as in the tail of the lobster, slide over each other, and are connected by a yellow membrane in the same manner. By this means the animal has a motion in its back, and the armour gives way to its necessary inflexions. These bands are of various numbers and sizes, and from them these animals have been distinguished into various kinds. In general, however, there are two large pieces that cover, one the shoulders, and the other the rump. In the back, between these, the bands are placed in different numbers that lap over each other, and give play to the whole. Besides their opening cross-ways, they also open down along

the back, so that the animal can move in every direction. In some there are but three of these bands between the large pieces; in others there are six; in a third kind there are eight; in a fourth kind, nine; in a fifth kind, twelve; and, lastly, in the sixth kind there is but one large piece, which covers the shoulders, and the rest of the body is covered with bands all down to the tail. These shells are differently coloured in different kinds, but most usually they are of a dirty grey. This colour in all arises from another peculiar circumstance in their conformation, for the shell itself is covered with a softish skin, which is smooth and transparent.

But, although these shells might easily defend this animal from a feeble enemy, yet they could make but a slight resistance against a more powerful antagonist; Nature, therefore, has given the armadillo the same method of protecting itself with the hedge-hog or the pangolin. The instant it perceives itself attacked, it withdraws the head under its shells, and lets nothing be seen but the tip of the nose; if the danger increases, the animal's precautions increase in proportion; it then tucks up its feet under its belly, unites its two extremities together, while the tail seems as a band to strengthen the connection; and it thus becomes like a ball, a little flattish on each side. In this position it continues obstinately fixed, while the danger is near, and often long after it is over. In this situation it is tossed about at the pleasure of every other quadruped, and very little resembling a creature endowed with life and motion. Whenever the Indians take it, which is in this form, by laying it close to the fire, they soon oblige the poor animal to un-

fold itself, and to face a milder death to escape a more severe.

This animal is a native only of America, for they were utterly unknown before the discovery of that continent. It is an inoffensive harmless creature, unless it finds the way into a garden, where it does a great deal of mischief, by eating the melons, the potatoes, and other vegetables. Although a native of the warmest parts of America, yet it bears the cold of our climate without any inconvenience. We have often seen them shewn among other wild beasts, which is a proof they are not difficult to be brought over. Their motion seems to be a swift walk, but they can neither run, leap, nor climb trees; so that if found in an open place, they have no method of escaping from their pursuers. Their only resource in such an extremity is to make towards their hole as fast as they can; or, if this be impracticable, to make a new hole before the enemy arrives. For this they require but a very few moments advantage; the mole itself does not burrow swifter than they can. For this purpose, they are furnished with claws extremely large, strong, and crooked, and usually four upon each foot. They are sometimes caught by the tail as they are making their way into the earth; but such is their resistance, and so difficult is it to draw them backward, that they leave their tail in the hand of their pursuer, and are very well contented to save their lives with its loss. The pursuers, sensible of this, never drag the tail with all their force, but hold it while another digs the ground about them; and thus these animals are taken alive. The instant the armadillo perceives itself in the power of its enemies, it has but one

last resource, to roll itself up, and thus patiently wait whatever tortures they think proper to inflict. The flesh of the smaller kinds is said to be delicate eating; so that we may suppose they receive no mercy. For this reason they are pursued with unceasing industry; and, although they burrow very deep in the earth, there have been many expedients used to force them out. The hunters sometimes contrive to fill the hole with smoke, which is often successful; they at other times force it by pouring in water. They also bring up a small kind of dogs to the chace that quickly overtake them, if at any distance from their burrow, and oblige them to roll themselves up in a ball, in which figure the hunters carry them home. If, however, the armadillo be near a precipice, it often escapes by rolling itself up, and then tumbling down from rock to rock, without the least danger or inconvenience. They are sometimes taken in snares laid for them by the sides of rivers and low moist places, which they particularly frequent; and this method, in general, succeeds better than any of the former, as their burrows are very deep, and they seldom stir out except in the night. At no time are they found at any great distance from their retreats, so that it requires some patience and skill to intercept their retreat.

There are scarcely any of these that do not root the ground like an hog, in search of such roots as make a principal part of their food. They live also upon melons and other succulent vegetables, and all will eat flesh when they can get it. They frequent water and watery places, where they feed upon worms, small fish, and water insects. It is

pretended that there is a kind of friendship between them and the rattle-snake, that they live peaceably and commodiously together, and are frequently found in the same hole. This, however, may be a friendship of necessity to the armadillo; the rattle-snake takes possession of its retreats, which neither are willing to quit, while each is incapable of injuring the other.

As to the rest, these animals, though they all resemble each other in the general character of being cloathed with a shell, yet differ a good deal in their size, and in the parts into which their shell is divided. The first of this kind, which has but three bands between the two large pieces that cover the back, is called the Tatu Apara. I will not enter into an exact description of its figure, which, how well written soever, no imagination could exactly conceive; and the reader would be more fatigued to understand than I to write it. The tail is shorter in this than any other kind, being not more than two inches long, while the shell, taking all the pieces together, is a foot long, and eight inches broad. The second is the Tatou of Ray, or the Encoubert of Buffon; this is distinguished from the rest by six bands across the back; it is about the size of a pig of a month old, with a small long head and a very long tail. The third is the Tatuette, furnished with eight bands, and not by a great deal so big as the former. Its tail is longer also, and its legs shorter in proportion. Its body, from the nose to the insertion of the tail, is about ten inches long, and the tail seven. The fourth is the Pig-headed Armadillo, with nine bands. This is much larger, than the former, being about two foot long from the nose

De Sève del. Warner sc.

Bats.

1. The great Madagascar Bat.

to the tail. The fifth is the Kabassou, or Cataphractus, with twelve bands, and still bigger than the former, or any other of its kind. This is often found above three feet long, but is never eaten as the rest are. The sixth is the Weasel-headed Armadillo, with eighteen bands, with a large piece before, and nothing but bands backward. This is above a foot long, and the tail five inches. Of all these, the Kabassou and the Encyubert are the largest; the rest are of a much smaller kind. In the larger kinds, the shell is much more solid than in the others, and the flesh is much harder, and unfit for the table. These are generally seen to reside in dry upland grounds, while the small species are always found in moist places, and in the neighbourhood of brooks and rivers. They all roll themselves into a ball; but those whose bands are fewest in number are least capable of covering themselves up completely. The Tatu Apara, for instance, when rolled up, presents two great interstices between its bands, by which it is very easily vulnerable, even by the feeblest of quadrupeds.

CHAP. VII.

Of Animals of the Bat Kind *.

HAVING in the last chapter described a race of animals that unite the boundaries between quadrupeds and insects, I come in this to a very different

[* The animals of this numerous family have sharp pointed erect teeth, placed near together: the fore-feet are webbed with a thin plicatile membrane which surrounds the body, and gives them

class, that serve to fill up the chasm between quadrupeds and birds. Some naturalists, indeed, have found animals of the bat kind so much partaking of the nature of both, that they have been at a loss in which rank to place them, and have doubted, in giving the history of the bat, whether it was a beast or a bird they were describing. These doubts, however, no longer exist; they are now universally made to take their place among quadrupeds, to which their bringing for their young alive, their hair, their teeth, as well as the rest of their habitudes and conformation, evidently entitle them. Pliny, Gesner, and Aldrovandus, who placed them among birds, did not consider that they wanted every character of that order of animals, except the power of flying. Indeed, when this animal is seen with an aukward and struggling motion, supporting itself in the air at the dusk of the evening, it presents in some measure the appearance of a bird; but naturalists, whose business it is to examine it more closely, to watch its habitudes, and inspect into its formation, are inexcusable for concurring in the mistake.

The bat in scarcely any particular resembles the bird, except in its power of sustaining itself in the air. It brings forth its young alive; it suckles them; its mouth is furnished with teeth; its lungs are formed like those of quadrupeds; its intestines, and its skeleton, have a complete resemblance, and

the power of flight. They appear, from experiments made by Spallanzani, to have a remarkable additional sense, which enables them, when deprived of sight, to avoid objects in their way, as readily as when they have the full power of vision.]

even are, in some measure, seen to resemble those of mankind *.

The bat most common in England, is about the size of a mouse; or nearly two inches and an half long. The membranes that are usually called wings, are, properly speaking, an extension of the skin all round the body, except the head, which, when the animal flies, is kept stretched on every side, by the four interior toes of the fore feet, which are enormously long, and serve like masts that keep the canvass of a sail spread, and regulate its motions †. The first toe is quite loose, and serves as a heel when the bat walks, or as an hook, when it would adhere to any thing. The hind feet are disengaged from the surrounding skin, and divided into five toes, somewhat resembling those of a mouse. The skin by which it flies is of a dusky colour. The body is covered with a short fur, of a mouse colour, tinged with red. The eyes are very small; the ears like those of a mouse.

This species of the bat is very common in England. It makes its first appearance early in summer, and begins its flight in the dusk of the evening. It principally frequents the sides of woods, glades, and shady walks; and is frequently observed to skim along the surface of pieces of water. It pursues gnats, moths, and nocturnal insects of every kind. It feeds upon these; but will not refuse meat, wherever it can find it. Its flight is a laborious, irregular movement; and if it happens to be interrupted in its course, it cannot readily prepare for a second elevation; so that if it strikes against

* Penis propendens.

† British Zoology.

any object, and falls to the ground, it is usually taken*. It appears only in the most pleasant evenings, when its prey is generally abroad, and flies in pursuit with its mouth open. At other times it continues in its retreat, the chink of a ruined building, or the hollow of a tree. Thus this little animal, even in summer, sleeps the greatest part of its time, never venturing out by day-light, nor in rainy weather; never hunting in quest of prey, but for a small part of the night, and then returning to its hole. But its short life is still more abridged, by continuing in a torpid state during the winter. At the approach of the cold season, the bat prepares for its state of lifeless inactivity, and seems rather to chuse a place where it may continue safe from interruption, than where it may be warmly or conveniently lodged. For this reason it is usually seen hanging by its hooked claws to the roofs of caves, regardless of the eternal damps that surround it. The bat seems the only animal that will venture to remain in these frightful subterranean abodes,

[* Mr. White, in his natural history of Selbourn, gives an account of a tame bat. "It would take flies, says he, out of a person's hand. If you gave it any thing to eat, it brought its wings round before the mouth, hovering and hiding its head, in the manner of birds of prey when they feed. The adroitness it shewed in shearing off the wings of flies, which it rejected, was worthy of observation, and pleased me much. Insects seemed to be most acceptable, though it did not refuse raw flesh when offered; so that the notion, that Bats go down chimneys and gnaw men's bacon, seems no improbable story. While I amused myself with this wonderful quadruped, I saw it several times confute the vulgar opinion, that Bats, when down on a flat surface, cannot get on the wing again, by rising with great ease from the floor. It ran, I observed, with more dispatch than I was aware of, but in a most ridiculous and grotesque mannner."]

where it continues in a torpid state, unaffected by every change of the weather. Such of this kind as are not provident enough to procure themselves a deep retreat, where the cold and heat seldom vary, are sometimes exposed to great inconveniences, for the weather often becomes so mild in the midst of winter as to warm them prematurely into life, and to allure them from their hole in quest of food, when Nature has not provided a supply. These, therefore, have seldom strength to return; but, having exhausted themselves in a vain pursuit, after insects which are not to be found, are destroyed by the owl, or any other animal that follows such petty prey.

The bat couples and brings forth in summer, generally from two to five at a time: of this I am certain, that I have found five young ones in a hole together; but whether they were the issue of one parent, I cannot tell. The female has but two nipples, and those forward on the breast, as in the human kind. This was a sufficient motive for Linnæus to give it the title of a Primas, to rank it in the same order with mankind; and to push this contemptible animal among the chiefs of the creation. Such arbitrary associations produce rather ridicule than instruction, and render even method contemptible: however, we are to forgive too strong an attachment to system in this able naturalist, since his application to the particular history of the animal counterbalances the defect*.

From Linnæus we learn, that the female make no nest for her young, as most birds and quadrupeds are known to do. She is barely content with the

* Fauna Suecica, p. 8.

first hole she meets, where sticking herself by her hooks against the sides of her apartment, she permits her young to hang at the nipple, and in this manner to continue for the first or second day. When, after some time, the dam begins to grow hungry, and finds a necessity of stirring abroad, she takes her little ones and sticks them to the wall, in the manner she before hung herself; there they immoveably cling, and patiently wait till her return.

Thus far this animal seems closely allied to the quadruped race. Its similitude to that of birds is less striking. As Nature has furnished birds with extremely strong pectoral muscles, to move the wings, and direct their flight, so has it also furnished this animal. As birds also have their legs weak, and unfit for the purposes of motion, the bat has its legs fashioned in the same manner, and is never seen to walk, or, more properly speaking, to push itself forward with its hind legs, but in cases of extreme necessity. The toes of the fore legs, or, if we may use the expression, its extremely long fingers, extend the web like a membrane that lies between them; and this, which is extremely thin, serves to lift the little body into the air; in this manner, by an unceasing percussion, much swifter than that of birds, the animal continues, and directs its flight; however, the great labour required in flying, soon fatigues it; for, unlike birds, which continue for days together upon the wing, the bat is tired in less than an hour, and then returns to its hole, satisfied with its supply, to enjoy the darkness of its retreat.

If we consider the bat as it is seen in our own country, we shall find it an harmless, inoffen-

sive creature. It is true that it now and then steals into a larder, and, like a mouse, commits its petty thefts upon the fattest parts of the bacon. But this happens seldom; the general tenor of its industry is employed in pursuing insects that are much more noxious to us than itself can possibly be; while its evening flight, and its unsteady wabbling motion, amuse the imagination, and add one figure more to the pleasing groupe of animated nature.

The varieties of this animal, especially in our country, are but few; and the differences scarcely worth enumeration, Naturalists mention the Long-eared Bat, much less than that generally seen, and with much longer ears; the Horse-shoe Bat, with an odd protuberance round its upper lip, somewhat in the form of an horse-shoe; the Rhinoceros bat, with an horn growing from the nose, somewhat similar to that animal from whence it has the name. These, with several others, whose varieties are too numerous, and differences too minute for a detail, are all inoffensive, minute, and contemptible; incapable, from their size, of injuring mankind, and not sufficiently numerous much to incommode him. But there is a larger race of bats, found in the East and West-Indies, that are truly formidable; each of these is singly a dangerous enemy; but when they unite in flocks, they then become dreadful. Were the inhabitants of the African coasts*, says Des Marchais, to eat animals of the bat kind, as they do in the East-Indies, they would never want a supply of provisions. They are there in such numbers, that,

* Des Marchais, vol. ii. p. 208.

when they fly, they obscure the setting sun. In the morning, at peep of day, they are seen sticking upon the tops of the trees, and clinging to each other, like bees when they swarm, or like large clusters of cocoa. The Europeans often amuse themselves with shooting among this huge mass of living creatures. and observing their embarrassment when wounded. They sometimes enter the houses, and the Negroes are expert at killing them; but although these people seem for ever hungry, yet they regard the bat with horror, and will not eat it, though ready to starve.

Of foreign bats, the largest we have any certain accounts of, is the Rousette, or the Great Bat of Madagascar. This formidable creature is near four feet broad, when the wings are extended; and a foot long, from the tip of the nose to the insertion of the tail It resembles our bat in the form of its wings, in its manner of flying, and in its internal conformation. It differs from it in its enormons size; in its colour, which is red, like that of a fox; in its head and nose also, which resemble those of that animal, and which have induced some to call it the flying fox: it differs also in the number of its teeth; and in having a claw on the fore foot, which is wanting in ours. This formidable creature is found only in the ancient continent; particularly in Madagascar, along the coasts of Africa and Malabar, where it is usually seen about the size of á large hen. When they repose, they stick themselves to the tops of the tallest trees, and hang with their heads downward. But when they are in motion, nothing can be more formidable: they are seen in clouds, darkening the air, as well by day as by

night, destroying the ripe fruits of the country, and sometimes settling upon animals, and man himself: they devour, indiscriminately, fruits, flesh, and insects, and drink the juice of the palm-tree: they are heard at night in the forests at more than two miles distance, with an horrible din; but at the approach of day, they usually begin to retire: nothing is safe from their depredations; they destroy fowls and domestic animals, unless preserved with the utmost care, and often fasten upon the inhabitants themselves, attack them in the face, and inflict very terrible wounds. In short, as some have already observed, the ancients seem to have taken their ideas of harpies from these fierce and voracious creatures, as they both concur in many parts of the description, being equally deformed, greedy, uncleanly, and cruel.

An animal not so formidable, but still more mischievous than these, is the American Vampyre. This is less than the former; but more deformed, and still more numerous. It is furnished with an horn like the rhinoceros bat; and its ears are extremely long. The other kinds generally resort to the forest, and the most deserted places; but these come into towns and cities, and, after sun-set, when they begin to fly, cover the streets like a canopy*. They are the common pest both of men and animals; they effectually destroy the one, and often distress the other. "They are," says Ulloa, "the most expert blood-letters in the world. The inhabitants of those warm latitudes being obliged, by the excessive heats, to leave open the doors and

* Ulloa, vol. i. p. 58.

windows of the chambers where they sleep, the vampyres enter, and if they find any part of the body exposed, they never fail to fasten upon it. There they continue to suck the blood, and it often happens that the person dies under the operation. They insinuate their tooth into a vein, with all the art of the most experienced surgeon, continuing to exhaust the body, until they are satiated. I have been assured," continues he, "by persons of the strictest veracity, that such an accident has happened to them; and that, had they not providentially awaked, their sleep would have been their passage into eternity; having lost so large a quantity of blood as hardly to find strength to bind up the orifice. The reason why the puncture is not felt is, besides the great precaution with which it is made, the gentle refreshing agitation of the bat's wings, which contribute to increase sleep, and soften the pain."

The purport of this account has been confirmed by various other travellers; who all agree that this bat is possessed of a faculty of drawing the blood from persons sleeping; and thus often destroying them before they awake. But still a very strong difficulty remains to be accounted for; the manner in which they inflict the wound. Ulloa, as has been seen, supposes that it is done by a single tooth; but this we know to be impossible, since the animal cannot infix one tooth without all the rest accompanying its motions; the teeth of the bat kind being pretty even, and the mouth but small. M. Buffon therefore supposes the wound to be inflicted by the tongue; which, however, appears to me too large to inflict an unpainful wound; and even

less qualified for that purpose than the teeth. Nor can the tongue, as M. Buffon seems to suppose, serve for the purposes of suction, since for this it must be hollow, like a syringe, which it is not found to be. I should therefore suppose, that the animal is endowed with a strong power of suction; and that, without inflicting any wound whatsoever, by continuing to draw, it enlarges the pores of the skin in such a manner that the blood at length passes, and that more freely the longer the operation is continued; so that, at last, when the bat goes off, the blood continues to flow. In confirmation of this opinion we are told, that where beasts have a thick skin, this animal cannot injure them; whereas, in horses, mules, and asses, they are very liable to be thus destroyed. As to the rest, these animals are considered as one of the great pests of South America; and often prevent the peopling of many parts of that continent: having destroyed at Barja, and several other places, such cattle as were brought there by the missionaries, in order to form a settlement.

CHAP. VIII.

Of Amphibious Quadrupeds.

THE gradations of Nature from one class of beings to another are made by imperceptible deviations. As we saw in the foregoing chapters quadrupeds almost degraded into the insect tribe, or mounted among the inhabitants of the air, we are at present

to observe their approach to fishes, to trace the degrees by which they become more unlike terrestrial animals, till the similitude of the fish prevails over that of the quadruped.

As in opposite armies the two bodies are distinct and separated from each other, while yet between them are various troops that plunder on both sides, and are friends to neither, so between terrestrial and aquatic animals there are tribes that can scarcely be referred to any rank, but lead an amphibious life between them. Sometimes in water, sometimes on land, they seem fitted for each element, and yet completely adapted to neither. Wanting the agility of quadrupeds upon land, and the perseverance of fishes in the deep, the variety of their powers only seems to diminish their force; and, though possessed of two different methods of living, they are more inconveniently provided than such as have but one.

All quadrupeds of this kind, though covered with hair in the usual manner, are furnished with membranes between the toes, which assist their motion in the water. Their paws are broad, and their legs short, by which they are more completely fitted for swimming, for, taking short strokes at a time they make them oftener and with greater rapidity. Some, however, of these animals are more adapted to live in the water than others; but, as their power increases to live in the deep, their unfitness for living upon land increases in the same proportion. Some, like the otter, resemble quadrupeds in every thing except in being in some measure web-footed; others depart still further, in being, like the beaver, not only web-footed, but having the

De Seve del. Warner sc.

The Otter.

tail covered with scales, like those of a fish. Others depart yet farther, as the seal and the morse, by having the hind feet stuck to the body like fins; and others, as the lamentin, almost entirely resemble fishes, by having no hind feet whatsoever. Such are the gradations of the amphibious tribe. They all, however, get their living in the water, either by habit or conformation; they all continue a long time under water; they all consider that element as their proper abode: whenever pressed by danger, they fly to the water for security; and, when upon land, appear watchful, timorous, and unwieldy.

In the first step of the progression from land to amphibious animals, we find the Otter, resembling those of the terrestrial kind in shape, hair, and internal conformation; resembling the aquatic tribes in its manner of living, and in having membranes between the toes to assist it in swimming. From this peculiar make of its feet, which are very short, it swims even faster than it runs, and can overtake fishes in their own element. The colour of this animal is brown; and it is somewhat of the shape of an overgrown weasel, being long, slender, and soft skinned. However, if we examine its figure in detail, we shall find it unlike any other animal hitherto described, and of such a shape as words can but weakly convey. Its usual length is about two feet, from the tip of the nose to the insertion of the tail; the head and nose are broad and flat; the mouth bears some similitude to that of a fish; the neck is short, and equal in thickness to the head; the body long; the tail broad at the insertion; but tapering off to a point at the end; the eyes are very

small, and placed nearer the nose than usual in quadrupeds. The legs are very short, but remarkably strong, broad, and muscular. The joints are articulated so loosely, that the animal is capable of turning them quite back, and bringing them on a line with the body, so as to perform the office of fins. Each foot is furnished with five toes, connected by strong broad webs like those of waterfowl. Thus Nature, in every part, has had attention to the life of an animal whose food is fish, and whose haunts must necessarily be about water*.

This voracious animal is never found but at the sides of lakes and rivers, but particularly the former, for it is seldom fond of fishing in a running stream, for the current of the water having more upon it than the fishes it pursues, if it hunts against the stream it swims too slow; and if with the stream, it overshoots its prey. However, when in rivers, it is always observed to swim against the stream, and to meet the fishes it preys upon, rather than to pursue them. In lakes it destroys much more than it devours, and is often seen to spoil a pond in the space of a few nights. But the damage they do by destroying fish is not so great as their tearing in pieces the nets of the fishers, which they infallibly do whenever they happen to be entangled. The instant they find themselves caught, they go to work with their teeth, and in a few minutes destroy nets of a very considerable value.

The otter has two different methods of fishing;

[*The otter differs in no respect from the weasel kind, except in having the feet webbed, and in living almost constantly in the water, from whence they chiefly derive their food, which is fish.]

the one by catching its prey from the bottom upward, the other by pursuing it into some little creek, and seizing it there. In the former case, as this animal has longer lungs than most other quadrupeds, upon taking in a quantity of air, it can remain for some minutes at the bottom; and whatever fish passes over at that time is certainly taken; for, as the eyes of fish are placed so as not to see under them, the otter attacks them off their guard from below; and, seizing them at once by the belly, drags them on shore, where it often leaves them untouched, to continue the pursuit for hours together. The other method is chiefly practised in lakes and ponds, where there is no current; the fish thus taken are rather of the smaller kind, for the great ones will never be driven out of deep water.

In this manner the otter usually lives during the summer, being furnished a supply much greater than its consumption; killing for its amusement, and infecting the edges of the lake with quantities of dead fish, which it leaves there as trophies rather of its victory than its necessities. But in winter, when the lakes are frozen over, and the rivers pour with a rapid torrent, the otter is often greatly distressed for provisions; and is then obliged to live upon grass, weeds, and even the bark of trees. It then comes upon land, and, grown courageous from necessity, feeds upon terrestial, animals, rats, insects, and even sheep themselves. Nature, however, has given it the power of continuing a long time without food; and, although during that season it is not rendered quite torpid, like the marmot or the dormouse, yet it keeps much more within its retreat,

which is usually the hollow of a bank worn under by the water. There it often forms a kind of gallery, running for several yards along the edge of the water; so that when attacked at one end, it flies to the other, and often evades the fowler by plunging into the water at forty or fifty paces distance, while he expects to find it just before him.

We learn from M. Buffon that this animal, in France, couples in winter, and brings forth in the beginning of spring. But it is certainly different with us, for its young are never found till the latter end of summer; and I have frequently, when a boy, discovered their retreats, and pursued them at that season. I am, therefore, more inclined to follow the account given us of this animal by Mr. Lots, of the Academy of Stockholm, who assures us that it couples about the middle of summer, and brings forth, at the end of nine weeks, generally three or four at a time. This, as well as the generality of his other remarks on this subject, agrees so exactly with what I remember concerning it, that I will beg leave to take him for my guide; assuring the reader that, however extraordinary the account may seem, I know it to be certainly true.

In the rivers and the lakes frequented by the otter, the bottom is generally stony and uneven, with many trunks of trees, and long roots stretching underneath the water*. The shore also is hollow and scooped inward by the waves. These are the places the otter chiefly chuses for its retreat; and there is scarcely a stone which does not bear the mark of its residence, as upon them its excrements are always made. It is chiefly by this mark

* Journal Etranger, Juin 1755, p. 14.

that its lurking places are known, as well as by the quantity of dead fish that are found lying here and there upon the banks of the water. To take the old ones alive is no easy task, as they are extremely strong, and there are few dogs that will dare to encounter them. They bite with great fierceness, and never let go their hold when they have once fastened. The best way, therefore, is to shoot them at once, as they never will be thoroughly tamed; and, if kept for the purposes of fishing, are always apt to take the first opportunity of escaping. But the young ones may be more easily taken and converted to very useful purposes. The otter brings forth its young generally under the hollow banks, upon a bed of rushes, flags, or such weeds as the place affords it in greatest quantities. I see in the British Zoology a description of its habitation, where that naturalist observes, "that it burrows under ground, on the banks of some river or lake, and always makes the entrance of its hole under water, then works up to the surface of the earth, and there makes a minute orifice for the admission of air; and this little air-hole is often found in the middle of some thicket." In some places this may be true, but I have never observed any such contrivance; the retreat, indeed, was always at the edge of the water, but it was only sheltered by the impending bank, and the otter itself seemed to have but a small share in its formation. But, be this as it may, the young ones are always found at the edge of the water; and, if under the protection of the dam, she teaches them instantly to plunge, like herself, into the deep, and escape among the rushes or weeds that fringe the stream. At such times, therefore, it

is very difficult to take them; for, though never so young, they swim with great rapidity, and in such a manner that no part of them is seen above water, except the tip of the nose. It is only when the dam is absent that they can be taken; and in some places there are dogs purposely trained for discovering their retreats. Whenever the dog comes to the place, he soon, by his barking, shews that the otter is there; which, if there be an old one, instantly plunges into the water, and the young all follow. But if the old one be absent, they continue terrified, and will not venture forth but under her guidance and protection. In this manner they are secured and taken home alive, where they are carefully fed with small fish and water. In proportion, however, as they gather strength, they have milk mixed among their food, the quantity of their fish provision is retrenched, and that of vegetables is increased, until at length they are fed wholly upon bread, which perfectly agrees with their constitution. The manner of training them up to hunt for fish requires not only assiduity but patience; however, their activity and use, when taught, greatly repays the trouble of teaching; and perhaps, no other animal is more beneficial to its master. The usual way is, first to learn them to fetch as dogs are instructed; but, as they have not the same docility, so it requires more art and experience to teach them. It is usually performed by accustoming them to take a truss stuffed with wool, of the shape of a fish, and made of leather, in their mouths, and to drop it at the word of command; to run after it when thrown forward, and to bring it to their master. From this they proceed to real fish, which are

De Seve del.   Warner sc.

The Beaver.

thrown dead into the water, and which they are taught to fetch from thence. From the dead they proceed to the live, until at last the animal is perfectly instructed in the whole art of fishing. An otter thus taught is a very valuable animal, and will catch fish enough to sustain not only itself but a whole family. I have seen one of these go to a gentleman's pond at the word of command, drive up the fish into a corner, and, seizing upon the largest of the whole, bring it off in its mouth, to its master.

Otters are to be met with in most parts of the world, and rather differ in size and colour from each other, than in habitudes or conformation*. In North America and Carolina they are usually found white, inclining to yellow. The Brasilian otter is much larger than ours, with a roundish head, almost like a cat. The tail is shorter, being but five inches long; and the hair is soft, short, and black, except on the head, where it is of a dark brown, with a yellowish spot under the throat.

The Beaver †.

IN all countries, as man is civilized and improved, the lower ranks of animals are repressed and degraded ‡. Either reduced to servitude, or

* Ray.

† [The Beaver has the front teeth in the upper-jaw abruptly cut off, and hollowed out in a transverse angle; those of the lower jaw being transverse at the tips: there are four grinders on each side in each jaw: the tail is long, flattened, and scaly; and it has perfect collar bones.]

‡ Buffon.

treated as rebels, all their societies are dissolved, and all their united talents rendered ineffectual. Their feeble arts quickly disappear, and nothing remains but their solitary instincts, or those foreign habitudes which they receive from human education. For this reason there remain no traces of their ancient talents and industry, except in those countries where man himself is a stranger; where, unvisited by his controlling power, for a long succession of ages, their little talents have had time to come to their limited perfection, and their common designs have been capable of being united.

The Beaver seems to be now the only remaining monument of brutal society. From the result of its labours, which are still to be seen in the remote parts of America, we learn how far instinct can be aided by imitation. We from thence perceive to what a degree animals, without language or reason, can concur for their mutual advantage, and attain by numbers those advantages which each, in a state of solitude, seems unfitted to possess.

If we examine the beaver merely as an individual, and unconnected with others of its kind, we shall find many other quadrupeds to exceed it in cunning, and almost all in the powers of annoyance and defence. The beaver, when taken from its fellows, and kept in a state of solitude or domestic tameness, appears to be a mild gentle creature, familiar enough, but somewhat dull, and even melancholy; without any violent passions or vehement appetites, moving but seldom, making no efforts to attain any good, except in gnawing the wall of its prison, in order to regain its freedom; yet this, however, without anger or precipitation, but calm

and indifferent to all about, without attachment or antipathies, neither seeking to offend nor desiring to please. It appears inferior to the dog in those qualities which render animals of service to man; it seems made neither to serve, to command, or to have connections with any other set of beings, and is only adapted for living among its kind. Its talents are entirely repressed in solitude, and are only brought out by society. When alone, it has but little industry, few tricks, and without cunning sufficient to guard it against the most obvious and bungling snares laid for it by the hunter. Far from attacking any other animal, it is scarcely possessed of the arts of defence. Preferring flight to combat, like all wild animals, it only resists when driven to an extremity, and fights only then when its speed can no longer avail.

But this animal is rather more remarkable for the singularity of its conformation than any intellectual superiorities it may be supposed, in a state of solitude, to possess. The beaver is the only creature among quadrupeds that has a flat broad tail, covered with scales, which serves as a rudder to direct its motions in the water. It is the sole quadruped that has membranes between the toes on the hind feet only, and none on the fore feet, which supply the place of hands as in the squirrel. In short, it is the only animal that in its fore parts entirely resembles a quadruped, and in its hinder parts seems to approach the nature of fishes, by having a scaly tail. In other respects, it is about two feet long, and near one foot high; it is somewhat shaped like a rat, except the tail, which, as has been observed, is flat and scaly, somewhat resembling a neat's

tongue at the point. Its colour is of a light brown; the hair of two sorts; the one longer and coarser; the other soft, fine, short and silky. The teeth are like those of a rat or a squirrel, but longer and stronger, and admirably adapted to cutting timber or stripping bark, to which purposes they are constantly applied. One singularity more may be mentioned in its conformation; which is, that, like birds, it has but one and the same vent for the emission of its excrements and its urine; a strange peculiarity, but which anatomists leave us no room to doubt of.

The beavers begin to assemble about the months of June and July, to form a society that is to continue for the greatest part of the year. They arrive in numbers from every side, and generally form a company of above two hundred. The place of meeting is commonly the place where they fix their abode, and this is always by the side of some lake or river. If it be a lake in which the waters are always upon a level, they dispense with building a dam; but if it be a running stream, which is subject to floods and falls, they then set about building a dam, or pier, that crosses the river, so that it forms a dead water in that part which lies above and below. This dam, or pier, is often fourscore or an hundred feet long, and ten or twelve feet thick at the base. If we compare the greatness of the work with the powers of the architect, it will appear enormous; but the solidity with which it is built is still more astonishing than its size. The part of the river over which this dam is usually built, is where it is most shallow, and where some great tree is found growing

by the side of the stream. This they pitch upon as proper for making the principal part in their building; and although it is often thicker than a man's body, they instantly set about cutting it down. For this operation they have no other instrument but their teeth, which soon lay it level, and that also on the side they wish it to fall, which is always across the stream. They then fall about cutting off the top branches, to make it lie close and even, and serve as the principal beam of their fabric *.

This dike, or causey, is sometimes ten, and sometimes twelve feet thick at the foundation. It descends in a declivity or slope, on that side next the water, which gravitates upon the work in proportion to the height, and presses it with a prodigious force towards the earth. The opposite side is erected perpendicular, like our walls; and that declivity, which, at the bottom, or basis, is about twelve feet broad, diminishes towards the top, where it is no more than two feet broad, or thereabouts. The materials whereof this mole consists, are wood and clay. The beavers cut, with surprising ease, large pieces of wood, some as thick as one's arm or one's thigh, and about four, five, or six feet in length, or sometimes more, according as the slope ascends. They drive one end of these stakes into the ground, at a small distance one from the other, intermingling a few with them that are smaller and more pliant. As the water, however, would find a passage through the intervals or spaces between them, and leave the reservoir dry, they have recourse to a

* Spectacle de la Nature.

clay, which they know where to find, and with which they stop up all the cavities both within and without, so that the water is duly confined. They continue to raise the dike in proportion to the elevation of the water, and the plenty which they have of it. They are conscious likewise that the conveyance of their materials by land would not be so easily accomplished as by water; and therefore they take the advantage of its increase, and swim with their mortar on their tails, and their stakes between their teeth, to the places where there is most occasion for them. If their works are, either by the force of the water, or the feet of the huntsmen, who run over them, in the least damnified, the breach is instantly made up; every nook and corner of the habitation is reviewed, and, with the utmost diligence and application, perfectly repaired. But when they find the huntsmen visit them too often, they work only in the night-time, or else abandon their works entirely, and seek out for some safer situation.

The dike or mole, being thus completed, their next care is to erect their several apartments, which are either round or oval, and divided into three stories, one raised above the other; the first below the level of the causey, which is for the most part full of water; the other two above it. This little fabrick is built in a very firm and substantial manner, on the edge of their reservoir, and always in such divisions or apartments as above mentioned; that in case of the water's increase, they may move up a story higher, and be no ways incommoded. If they find any little island contiguous to their reservoir, they fix their mansion there, which is then

more solid, and not so frequently exposed to the overflowing of the water, in which they are not able to continue for any length of time. In case they cannot pitch upon so commodious a situation, they drive piles into the earth, in order to fence and fortify their habitation against the wind as well as the water. They make two apertures, at the bottom, to the stream; one is a passage to their bagnio, which they always keep neat and clean; the other leads to that part of the building where every thing is conveyed, that will either soil or damage their upper apartments. They have a third opening or door-way, much higher, contrived for the prevention of their being shut up and confined, when the frost and snow has closed the apertures of the lower floors. Sometimes they build their houses altogether upon dry land; but then they sink trenches five or six feet deep, in order to descend into the water when they see convenient. They make use of the same materials; and are equally industrious in the erection of their lodges, as their dikes. Their walls are perpendicular, and about two feet thick. As their teeth are more serviceable than saws, they cut off all the wood that projects beyond the wall. After this, when they have mixed up some clay and dry grass together, they work it into a kind of mortar, with which, by the help of their tails, they plaister all their works, both within and without.

The inside is vaulted, and is large enough for the reception of eight or ten beavers. In case it rises in an oval figure, it is for the generality above twelve feet long, and eight or ten feet broad. If the number of inhabitants increase to fifteen, twenty,

or thirty, the edifice is enlarged in proportion. I have been credibly informed; that four hundred beavers have been discovered to reside in one large mansion-house, divided into a vast number of apartments, that had a free communication one with another.

All these works, more especially in the northern parts, are finished in August, or September at farthest; at which time they begin to lay in their stores. During the summer, they are perfect epicures; and regale themselves every day on the choisest fruits and plants the country affords. Their provisions, indeed, in the winter season, principally consist of the wood of the birch, the plane, and some few other trees, which they steep in water, from time to time, in such quantities as are proportioned to the number of inhabitants. They cut down branches from three to ten feet in length. Those of the largest dimensions are conveyed to their magazines by a whole body of beavers; but the smallest by one only: each of them, however, takes a different way, and has his proper walk assigned him, in order that no one labourer should interrupt another in the prosecution of his work. Their wood-yards are larger or smaller, in proportion to the number in family: and, according to the observation of some curious naturalists, the usual stock of timber, for the accommodation of ten beavers, consists of about thirty feet in a square surface, and ten in depth. These logs are not thrown up in one continual pile, but laid one across the other, with intervals or small spaces between them, in order to take out, with the greater facility, but just such a quantity as they shall want for their immediate consumption, and

those parcels only which lie at the bottom in the water, and have been duly steeped. This timber is cut again into small particles, and conveyed to one of their largest lodges, where the whole family meet, to consume their respective dividends, which are made impartially, in even and equal portions. Sometimes they traverse the woods, and regale their young with a more novel and elegant entertainment.

Such as are used to hunt these animals, know perfectly well, that green wood is much more acceptable to them, than that which is old and dry; for which reason they plant a considerable quantity of it round their lodgments; and as they come out to partake of it, they either catch them in snares, or take them by surprize. In the winter, when the frosts are very severe, they sometimes break a large hole in the ice; and when the beavers resort thither for the benefit of a little fresh air, they either kill them with their hatchets, or cover the opening with a large substantial net. After this, they undermine and subvert the whole fabrick: whereupon the beavers, in hopes to make their escape in the usual way, fly with the utmost precipitation to the water, and plunging into the aperture, fall directly into the net, and are inevitably taken.

[Captain Cartwright, who resided above fourteen years on the coast of Labradore, and who observed much of the manners of the beaver, has added something to what was before known of this wonderful animal. He says that they never eat fish, or any other animal food; but live upon the leaves and bark of such trees and shrubs as have not a resinous juice. When they eat, they hold their food in their fore

paws, and sit up like monkies. They never castrate themselves, as has been supposed, in order to escape their pursuers; for the bag containing the castor lies so completely within them, that the operation must be performed by a very skilful hand indeed, and with the greatest care not to kill them. They copulate in May, and bring forth towards the end of June: and the young ones continue to live with their parents until they are full three years old; then pair off, build a house for themselves, and begin to breed. Yet sometimes, and not uncommonly, if they are undisturbed and have plenty of provisions, they will continue longer with the old ones, and breed in the same house. Although they will continue in the same pond for three or four years or more, yet they will frequently build themselves a new house every year; at other times they will repair an old one, and live in that; and they often build a new house upon, or else adjoining to an old one, making the two tops into one, and cut a communication between the lodgings: hence, I presume, arose the idea of their having several apartments. Whether they do or do not make use of their tail as trowels to plaister their houses with, I cannot say, though I am inclined to believe they do not; because their tail is so heavy, and the tendons of it so weak, though numerous, that I do not think they can use it to that effect, and that therefore they daub the earth on with their hands, for I must call them so. When they dive, they give a smack on the water with their tails as they go down; but that appears to me to proceed from the tail falling over with its own weight. They move very slowly on land, and being also a very

cowardly creature, are easily killed there by any man or beast that chances to meet with them; yet, being defended by a long fur and thick skin, and armed with long strong teeth firmly set in very strong jaws, they are capable of making a stout resistance. I have heard of an old one, which cut the leg of a dog nearly off at one stroke, and I make not the least doubt of the truth of the information. Still I have been informed, that otters will enter into their houses and kill them; but I believe it must only be the young ones, when the old ones are from home; for I hardly think that an old beaver would suffer itself to be killed by an otter. When met on shore by a man, they have been known to set upon their breech and fall a crying like a young child; an instance of which I must relate.

A man newly arrived at Newfoundland, was walking through a wood and near a pond; where he chanced to meet a beaver with a billet of wood upon his shoulder, going down to the water. As soon as the creature saw him, he laid down his load, sat upon his breech, and cried exactly like an infant. The man having more tenderness in his disposition than such men usually have, not knowing what it was, and perhaps taking it for a creature superior to the brute creation, stopped and addressed it thus. "Thou needest not cry, poor thing, for I would not hurt thee for the world; so thou mayest take up thy turn of fire-wood and go home about thy business." The above story I do not give as a positive fact; relating it only as I have heard it. It is an actual truth however, that a late servant of mine, Charles Atkinson, could never be prevailed

upon to taste the flesh of beavers, because he was sure, he said, they were enchanted christians.

In bringing their food into their house, they often strike one end of the stick on the bridge of a trap, which the furrier has placed for them in the angle. From this circumstance, many of the ignorant people have positively asserted, that the sagacity of the beaver induced him to do so, to prevent being caught himself; but if beavers had so much knowledge, very few of them, I am persuaded, would be taken. Buffon and others say, that they make use of their tails as sleds, to draw stones and earth upon. I cannot contradict their assertions, as I have never seen these animals work; but I do not believe it, because their tails being thickest at the root and down the centre part, it would be almost impossible for them to keep a stone on it, unless held there by another: nor have I ever observed that they had taken any stones off the ground; but they bring them from the sides and bottoms of the water, and must make use of their hands for those purposes; as they could easier shove or roll them along, than draw them on their tails; besides, the skin of the under part of the tail would be rubbed off by the friction on the ground, which never yet has been observed to be the case with them, and is a stronger proof that they never do make use of them for that purpose.

It oftentimes happens that a single beaver lies retired, and it is then stiled, by furriers, a hermit: they say, it is turned out of the family because it is lazy and will not work; and what is very singular, all hermit beavers have a black mark on the inside of the skin upon their backs, called a saddle,

which distinguishes them. I rather think the cause of this seclusion to be fidelity, as they are very faithful creatures to their mate; and by some accident or other, losing that mate, they either will not pair again, or remain single until they can find another hermit; and that the saddle proceeds from the want of a partner to keep their back warm.]

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*The Seal**.

EVERY step we proceed in the description of amphibious quadrupeds, we make nearer advances to the tribe of fishes. We first observed the otter with its feet webbed, and formed for an aquatic life; we next saw the beaver with the hinder parts covered with scales, resembling those of fishes; and we now come to a class of animals in which the shape and habitude of fishes still more apparently prevail, and whose internal conformation attaches them very closely to the water. The Seal, in general, resembles a quadruped in some respects, and a fish in others. The head is round, like that of a man; the nose broad; like that of the otter; the teeth like those of a dog; the eyes large and sparkling; no external ears, but holes that serve for that purpose; the neck is well proportioned, and

* [Seals have six pointed parallel teeth in the upper-jaw, the outer ones of which are larger; in the lower jaw there are four bluntish parallel distinct ones, all equal: in both jaws, on each side, is a single large pointed canine tooth; the upper ones distinct from the cutting teeth, the lower from the grinders: there are five grinders on each side above, and six below; all of which have three knobs; the hind-feet are united into a kind of fin.]

of a moderate length; but the body thickest where the neck is joined to it. From thence the animal tapers down to the tail, growing all the way smaller, like a fish. The whole body is covered with a thick bristly shining hair, which looks as if it were entirely rubbed over with oil; and thus far the quadruped prevails over the aquatic. But it is in the feet that this animal greatly differs from all the rest of the quadruped kind; for, though furnished with the same number of bones with other quadrupeds, yet they are so stuck on the body, and so covered with a membrane, that they more resemble fins than feet; and might be taken for such, did not the claws with which they are pointed shew their proper analogy. In the fore-feet, or rather hands, all the arm and the cubit are hid under the skin, and nothing appears but the hand from the wrist downwards; so that if we imagine a child with its arms swathed down, and nothing appearing but its hands at each side of the body, towards the breast, we may have some idea of the formation of this animal in that part. These hands are covered in a thick skin, which serves, like a fin, for swimming; and are distinguished by five claws, which are long, black, and piercing. As to the hind-feet, they are stretched out on each side of the short tail, covered with an hairy skin like the former, and both together almost joining at the tail; the whole looks like the broad flat tail of a fish; and, were it not for five claws which appear, might be considered as such. The dimensions of this animal are various, being found from four feet long to nine. They differ also in their colours; some being black, others spotted, some white, and many more yellow. It would,

therefore, be almost endless to mention the varieties of this animal. Buffon describes three; and Krantz mentions five, all different from those described by the other. I might, were I fond of such honours, claim the merit of being a first describer myself; but, in fact, the varieties in this animal are so many, that, were they all described, the catalogue would be as extensive as it would be useless and unentertaining. It is sufficient to observe, that they agree in the general external characters already mentioned, and internally in two or three more, which are so remarkable as to deserve peculiar attention.

It has been often remarked, that all animals are sagacious in proportion to the size of their brain. It has, in support of this opinion, been alledged, that man, with respect to his bulk, has of all others the largest. In pursuance of this assumption, some erroneous speculations have been formed. But, were the size of the brain to determine the quantity of the understanding, the seal would of all other animals be the most sagacious; for it has, in proportion, the largest brain of any, even man himself not excepted. However, this animal is possessed of but very few advantages over other quadrupeds; and the size of its brain furnishes it with few powers that contribute to its wisdom or its preservation.

This animal differs also in the formation of its tongue from all other quadrupeds. It is forked or slit at the end like that of serpents; but for what purpose it is thus singularly contrived we are at a loss to know. We are much better informed with respect to a third singularity in its conformation, which is, that the *foramen ovale* in the heart is open.

Those who are in the least acquainted with anatomy know, that the veins uniting bring their blood to the heart, which sends it into the lungs, and from thence it returns to the heart again, to be distributed through the whole body. Animals, however, before they are born, make no use of their lungs; and therefore their blood, without entering their lungs, takes a shorter passage through the very partition of the heart, from one of its chambers to the other, thus passing from the veins directly into those vessels that drive it through the whole frame. But the moment the animal is brought forth, the passage through the partition (which passage is called the *foramen ovale)* closes up, and continues closed for ever; for the blood then takes its longest course through the lungs to return to the other chamber of the heart again. Now the seal's heart resembles that of an infant in the womb, for the *foramen ovale* never closes; and, although the blood of this animal commonly circulates through the lungs, yet it can circulate without their assistance, as was observed above, by a shorter way*. From hence, therefore, we see the manner in which this animal is adapted for continuing under water; for, being under no immediate necessity of breathing, the vital motions are still carried on while it continues at the bottom; so that it can pursue its prey in that element, and yet enjoy all the delights and advantages of ours.

The water is the seal's usual habitation, and

* I have followed the usual observations of naturalists with respect to the *foramen ovale* in this animal: I have many reasons, however, to incline me to think that the *foramen* is not entirely open. But this is not the place for a critical enquiry of this kind.

whatever fish it can catch its food. Though not equal in instinct and cunning to some terrestrial animals, it is greatly superior to the mute tenants of that element in which it chiefly resides. Although it can continue for several minutes under water, yet it is not able, like fishes, to remain there for any length of time; and a seal may be drowned like any other terrestrial animal. Thus it seems superior in some respects to the inhabitants of both elements, and inferior in many more. Although furnished with legs, it is in some measure deprived of all the advantages of them*. They are shut up within its body, while nothing appears but the extremities of them, and these furnished with very little motion, but to serve them as fins in the water. The hind-feet, indeed, being turned backwards, are entirely useless upon land; so that when the animal is obliged to move, it drags itself forward like a reptile, and with an effort more painful. For this purpose it is obliged to use its fore-feet, which, though very short, serve to give it such a degree of swiftness, that a man cannot readily overtake it; and it runs towards the sea. As it is thus aukwardly formed for going upon land, it is seldom found at any distance from the sea-shore, but continues to bask upon the rocks; and, when disturbed, always plunges down at once to the bottom.

The seal is a social animal, and, wherever it frequents, numbers are generally seen together. They are found in every climate, but in the north and icy seas they are particularly numerous. It is on those shores, which are less inhabited than ours, and where the fish resort in greater abundance, that

* Buffon.

they are seen by thousands, like flocks of sheep, basking on the rocks, and suckling their young. There they keep watch like other gregarious animals; and, if an enemy appear, instantly plunge altogether into the water. In fine weather they more usually employ their time in fishing; and generally come on shore in tempests and storms. The seal seems the only animal that takes delight in these tremendous conflicts of Nature. In the midst of thunders and torrents, when every other creature takes refuge from the fury of the elements, the seals are seen by thousands sporting along the shore, and delighted with the universal disorder. This, however, may arise from the sea being at that time too turbulent for them to reside in; and they may then particularly come upon land, when unable to resist the shock of their more usual element.

As seals are gregarious, so are they also animals of passage, and perhaps the only quadrupeds that migrate from one part of the world to another. The generality of quadrupeds are contented with their native plains and forests, and seldom stray, except when necessity or fear impels them. But seals change their habitation; and are seen in vast multitudes directing their course from one continent to another*. On the northern coasts of Greenland they are seen to retire in July, and to return again in September. This time it is supposed they go in pursuit of food. But they make a second departure in March to cast their young, and return in the beginning of June, young and all, in a great body together, observing in their route a certain fixed time and track, like birds of passage. When they

* Krantz, vol. i. p. 129.

go upon this expedition, they are seen in great droves, for many days together, making towards the North, taking that part of the sea most free from ice, and going still forward into those seas where man cannot follow. In what manner they return, or by what passage, is utterly unknown; it is only observed, that when they leave the coasts to go upon this expedition, they are all extremely fat, but on their return they come hóme excessively lean.

The females in our climate bring forth in winter, and rear their young upon some sand-bank, rock, or desolate island, at some distance from the continent. When they suckle their young, they sit up on their hinder legs, while these, which are at first white with woolly hair, cling to the teats, of which there are four in number, near the navel*. In this manner the young continue in the place where they are brought forth, for twelve or fifteen days; after which the dam brings them down to the water, and accustoms them to swim and get their food by their own industry. As each litter never exceeds above three or four, so the animal's cares are not much divided, and the education of her little ones is soon completed. In fact, the young are particularly docile; they understand the mother's voice among the numerous bleatings of the rest of the old ones; they mutually assist each other in danger, and are perfectly obedient to her call. Thus early accustomed to subjection, they continue to live in so ciety, hunt and herd together, and have a variety of tones, by which they encourage to pursue, or warn each other of danger. Some compare their voices

* Coeunt in littore resupinata femina. LIN. SYST.

to the bleating of a flock of sheep, interrupted now and then by the barking of angry dogs, and sometimes the shriller notes of a cat *. All along the shore, each has its own peculiar rock, of which it takes possession, and where it sleeps when fatigued with fishing, uninterrupted by any of the rest. The only season when their social spirit seems to forsake them, is that when they feel the influences of natural desire. They then fight most desperately; and the male that is victorious keeps all the females to himself. Their combats on these occasions are managed with great obstinacy, and yet great justice: two are never seen to fall upon one together; but each has its antagonist, and all fight an equal battle, till one alone becomes victorious.

We are not certainly informed how long the females continue pregnant; but if we may judge from the time which intervenes between their departure from the Greenland coasts and their return, they cannot go above seven or eight months at the farthest. How long this animal lives is also unknown: a gentleman whom I knew in Ireland kept two of them, which he had taken very young, in his house for ten years; and they appeared to have the marks of age at the time I saw them, for they were grown grey about the muzzle; and it is very probable they did not live many years longer. In their natural state the old ones are seen very fat and torpid, separated from the rest, and, as it should seem, incapable of procreation.

As their chief food is fish, so they are very expert at pursuing and catching it. In those places where the herrings are seen in shoals, the seals fre-

* Linnæi Syst.

quent and destroy them by thousands. When the herring retires, the seal is then obliged to hunt after fish that are stronger, and more capable of evading the pursuit*: however, they are very swift in deep waters, dive with great rapidity, and, while the spectator eyes the spot at which they disappear, they are seen to emerge at above an hundred yards distance. The weaker fishes, therefore, have no other means to escape their tyranny, but by darting into the shallows. The seal has been seen to pursue a mullet, which is a swift swimmer, and to turn it to and fro, in deep water, as an hound does an hare on land. The mullet has been seen trying every art of evasion; and at last swimming into shallow water, in hopes of escaping. There, however, the seal followed; so that the little animal had no other way left to escape, but to throw itself on one side, by which means it darted into shoaler water than it could have swam in with the belly undermost; and thus at last it got free.

As they are thus the tyrants of the element in which they chiefly reside, so they are not very fearful even upon land, except on those shores which are thickly inhabited, and from whence they have been frequently pursued. Along the desert coasts where they are seldom interrupted by man, they seem to be very bold and courageous; if attacked with stones, like dogs, they bite such as are thrown against them; if encountered more closely, they make a desperate resistance, and, while they have any life, attempt to annoy their enemy. Some have been known, even while they were skinning, to turn round and seize their butchers; but they are gene-

* British Zoology, vol. i. p. 75.

rally dispatched by a stunning blow on the nose. They usually sleep soundly where not frequently disturbed; and that is the time when the hunters surprise them. The Europeans who go into the Greenland seas upon the whale-fishery, surround them with nets, and knock them on the head; but the Greenlanders, who are unprovided with so expensive an apparatus, destroy them in a different manner. One of these little men paddles away in his boat, and when he sees a seal asleep on the side of a rock, darts his lance, and that with such unerring aim, that it never fails to bury its point in the animal's side. The seal feeling itself wounded, instantly plunges from the top of the rock, lance and all, into the sea, and dives to the bottom; but the lance has a bladder tied to one end, which keeps buoyant, and resists the animal's descent; so that every time the seal rises to the top of the water, the Greenlander strikes it with his oar, until he at last dispatches it. But, in our climate, the seals are much more wary, and seldom suffer the hunters to come near them. They are often seen upon the rocks of the Cornish coast, basking in the sun, or upon the inaccessible cliffs, left dry by the tide. There they continue, extremely watchful, and never sleep long without moving, seldom longer than a minute; for then they raise their heads, and if they see no dangers, they lie down again, raising and reclining their heads alternately, at intervals of about a minute each. The only method, therefore, that can be taken, is to shoot them: if they chance to escape, they hasten towards the deep, flinging stones and dirt behind them as they scramble along, and at the same time expressing their pain or their fears, by

the most distressful cry; if they happen to be overtaken, they make a vigorous resistance with their feet and teeth till they are killed.

The seal is taken for the sake of its skin, and for the oil its fat yields. The former sells for about four shillings; and, when dressed, is very useful in covering trunks, making waist-coats, shot-pouches, and several other conveniences. The flesh of this animal formerly found place at the tables of the great. At a feast provided by Archbishop Nevill, for Edward the Fourth, there were twelve seals and porpoises provided, among other extraordinary rarities.

As a variety of this animal, we may mention the Sea Lion, described in Anson's Voyages. This is much larger than any of the former; being from eleven to eighteen feet long. It is so fat that, when the skin is taken off, the blubber lies a foot thick all round the body. It seems to differ from the ordinary seal, not only in its size, but also in its food; for it is often seen to graze along the shore, and to feed upon the long grass that grows up along the edges of brooks. Its cry is very various, sometimes resembling the neighing of an horse, and sometimes the grunting of the hog. It may be regarded as the largest of the seal family.

[This animal is principally distinguished by the large mane which covers the head and neck of the male, and from which it has received the denomination of the sea-lion. It is of a reddish-brown colour, and a full grown male will weigh from twelve to fifteen hundred pounds. They reside in families distinct from the common seal, each male having from two to four females, which he treats

with much affection. They do not, as has been supposed, graze on shore; but their food consists entirely of fish, penguins, and marine animals. During the season of breeding, they are said to fast for a long time, and to become extremely emaciated; they swallow however, at intervals, large stones, for the purpose of keeping the stomach distended.]

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*The Morse**.

THE Morse is an animal of the seal kind; but differing from the rest, in a very particular formation of the teeth, having two large tusks growing from the upper jaw, shaped like those of an elephant, but directed downwards; whereas, in the elephant, they grow upright, like horns; it also wants the cutting-teeth both above and below: as to the rest it pretty much resemble a seal, except that it is much larger, being from twelve to sixteen feet long. The morses are also generally seen to frequent the same places that seals are known to reside in; they have the same habitudes, the same advantages, and the same imperfections. There are, however, fewer varieties of the morse than the seal; and they are rarely found, except in the frozen regions near the pole. They were formerly more numerous than at present; and the savage natives of

* [The Morse and the Manati, with all their tribe, have no front teeth in either jaw, in the full grown animal: in the upper jaw there are two tusks, which generally project downwards far beyond the mouth: the grinders have wrinkled surfaces: the lips are doubled; and the hind-feet unite at the extremity of the body into a kind of fin.]

The Morse.

the coasts of Greenland destroyed them in much greater quantities before those seas were visited by European ships upon the whale-fishery, than now. Whether these animals have been since actually thinned by the fishers, or have removed to some more distant and unfrequented shores, is not known; but certain it is, that the Greenlanders, who once had plenty, are now obliged to toil more assiduously for subsistence; and as the quantity of their provisions decrease, for they live mostly upon seals, the numbers of that poor people are every day diminishing. As to the teeth, they are generally from two to three feet long; and the ivory is much more esteemed than that of the elephant, being whiter and harder. The fishers have been known formerly to kill three or four hundred at once; and along those shores where they chiefly frequented, their bones are still seen lying in prodigious quantities. In this manner a supply of provisions, which would have supported the Greenland nation for ages, has been, in a few years, sacrificed to those who did not use them, but who sought them for the purposes of avarice and luxury!

[Captain Cook, in his last voyage to America, says, that "they lie in herds of many hundreds, huddling over one another like swine; and roar or bray so very loud, that in the night, or foggy weather, they gave us notice of the vicinity of the ice before we could see it. We never found the whole herd asleep, some being always úpon the watch. These, on the approach of the boat, would wake those next to them; and the alarm being thus gradually communicated, the whole herd would be awake presently. But they were seldom in a hurry

to get away, till after they had been once fired at. They then would tumble over one another into the sea, in the greatest confusion. And if we did not, at the first discharge, kill those we fired at, we generally lost them, though mortally wounded. They did not appear to us to be that dangerous animal which some authors have described; not even when attacked. They are rather more so in appearance, than in reality. Vast numbers of them would follow and come close up to the boats; but the flash of a musket in the pan, or even the bare pointing at one of them, would send them down in an instant. The female will defend the young to the very last, and at the expense of her own life, whether in the water or upon the ice. Nor will the young one quit the dam, though she be dead; so that if one is killed, the other is certain prey. The dam, when in the water, holds the young one between her fore fins."]

The Manati.

WE come, in the last place, to an animal that terminates the boundary between quadrupeds and fishes. Instead of a creature preying among the deeps, and retiring upon land for repose or refreshment, we have here an animal that never leaves the water, and is enabled to live only there. It cannot be called a quadruped, as it has but two legs only; nor can it be called a fish, as it is covered with hair. In short, it forms the link that unites those two great tribes to each other; and may be indiscri-

minately called the last of beasts, or the first of fishes.

We have seen the seal approaching nearly to the aquatic tribes, by having its hind legs thrown back on each side of the tail, and forming something that resembled the tail of a fish; but upon examining the skeleton of that animal, its title to the rank of a quadruped was observed plainly to appear, having all the bones of the hinder legs and feet as complete as any other animal whatsoever.

But we are now come to a creature that not only wants the external appearance of hinder legs, but, when examined internally, will be found to want them altogether. The manati is somewhat shaped in the head and the body like the seal; it has also the fore legs or hands pretty much in the same manner, short and webbed, but with four claws only: these also are shorter in proportion than in the former animal, and placed nearer the head; so that they can scarcely assist its motions upon land. But it is in the hinder parts that it chiefly differs from all others of the seal kind; for the tail is perfectly that of a fish, being spread out broad like a fan, and wanting even the vestiges of those bones which make the legs and feet in others of its kind. The largest of these are about twenty-six feet in length; the skin is blackish, very tough and hard; when cut, as black as ebony; and there are a few hairs scattered, like bristles, of about an inch long. The eyes are very small in proportion to the animal's head; and the ear-holes, for it has no external ears, are so narrow as scarcely to admit a pin's head. The tongue is so short, that some have pretended it has none at all; and the teeth are composed only of two solid white bones,

running the whole length of both jaws, and formed merely for chewing, and not tearing its vegetable food. The female has breasts placed forward, like those of a woman; and she brings forth but one at a time: this she holds with her paws to her bosom; there its sticks, and accompanies her where-ever she goes.

This animal can scarcely be called amphibious, as it never entirely leaves the water, only advancing the head out of the stream, to reach the grass on the river sides. Its food is entirely upon vegetables; and, therefore, it is never found far in the open sea, but chiefly in the large rivers of South America; and often above two thousand miles from the ocean. It is also found in the seas near Kamtschatka, and feeds upon the weeds that grow near the shore. There are likewise level greens at the bottom of some of the Indian bays, and there the manaties are harmlessly seen grazing among turtles and other crustaceous fishes, neither giving nor fearing any disturbance. These animals when unmolested, keep together in large companies, and surround their young ones.* They bring forth most commonly in autumn; and it is supposed they go with young eighteen months, for the time of generation is in spring.

The manati has no voice nor cry, for the only noise it makes, is by fetching its breath. Its internal parts somewhat resemble those of an horse; its intestines being longer, in proportion, than those of any other creature, the horse only excepted.

The fat of the manati, which lies under the skin,

* Acta Petropolitana.

when exposed to the sun has a fine smell and taste, and far exceeds the fat of any sea animal; it has this peculiar property, that the heat of the sun will not spoil it, nor make it grow rancid; its taste is like the oil of sweet almonds; and it will serve very well, in all cases, instead of butter: any quantity may be taken inwardly with safety, for it has no other effect than keeping the body open. The fat of the tail is of an harder consistence; and, when boiled, is more delicate than the former. The lean is like beef, but more red; and may be kept a long while, in the hottest days, without tainting. It takes up a long time in boiling; and, when done, eats like beef. The fat of the young one is like pork; the lean is like veal; and upon the whole, it is very probable that this animal's flesh somewhat resembles that of turtle; since they are fed in the same element, and upon the very same food. The turtle is a delicacy well known among us: our luxuries are not as yet sufficiently heightened to introduce the manati; which, if it could be brought over, might singly suffice for a whole corporation.

[*The Platypus.*

OF all the treasures in Natural History, with which the new world is gradually enriching our stock, it is probable that none has yet been discovered, differing so much in its general appearance from every other known quadruped, as the Duck-billed Platypus. It is a native of new Holland, and was first described by Dr. Shaw, in his Natu-

ralist's Miscellany, from a specimen in the possession of Mr. Dobson.

"Of all the mammalia yet known, it seems the most extraordinary in its conformation; exhibiting the perfect resemblance of the beak of a duck, engrafted on the head of a quadruped. So accurate is the similitude, that at first view, it naturally excites the idea of some deceptive preparation by artificial means: the very epidermis, proportion, serratures, manner of opening, and other particulars of the beak of a shoveller, or the broad billed species of duck, presenting themselves to the view; nor is it without the most minute and rigid examination, that we can persuade ourselves of its being the real beak or snout of a quadruped.

The body is depressed, and has some resemblance to that of an otter in miniature; it is covered with a very thick, soft, and beaver-like fur; and is of a moderately dark brown above, and of a somewhat ferruginous white beneath. The head is flattish, and rather small than large: the mouth or snout, as before observed, so exactly resembles that of some broad billed species of duck, that it might be mistaken for such; round the base is a flat circular membrane, somewhat deeper or wider below than above; viz. below near the fifth of an inch, and above an eighth. The tail is flat, furry like the body, rather short and obtuse, with an almost bifid termination: it is broader at the base; and gradually lessens to the tip, and is about three inches in length: its colour is similar to that of the body. The length of the whole animal, from the tip of the beak, to that of the tail, is thirteen inches: of the beak an inch and a half. The legs are very short,

terminating in a broad web, which on the fore-feet extends to a considerable distance beyond the claws; but on the hind-feet reaches no farther than the roots of the claws. On the fore-feet are five claws, straight, strong, and sharp pointed; the two exterior ones somewhat shorter than the three middle ones. On the hind-feet are six claws, longer, and more inclining to a curved form than those of the fore-feet: the exterior toe and claw are considerably shorter than the four middle ones: the interior or sixth is seated much higher up than the rest, and resembles a strong sharp spur. All the legs are hairy above; the fore-feet are naked both above and below; but the hind-feet are hairy above, and naked below. The internal edges of the under mandible, (which is narrower than the upper) are serrated or channelled with numerous striæ, as in a duck's bill. The nostrils are small and round, and are situated about a quarter of an inch from the tip of the bill, and are about the eighth of an inch distant from each other. There is no appearance of teeth; the palate is removed, but seems to have resembled that of a duck: the tongue also is wanting in the specimen. The ears, or auditory foramina, are placed about half an inch beyond the eyes; they appear like a pair of oval holes, of the eighth of an inch in diameter; there being no external ear. On the upper part of the head, on each side, a little beyond the beak, are situated two smallish oval white spots; in the lower part of each of which are embedded the eyes, or at least the parts allotted to the animal for some kind of vision; for from the thickness of the fur and the smallness of the organs, they seem to have been

but obscurely calculated for distinct vision; and are probably like those of moles, and some other animals of that tribe; or perhaps even subcutaneous; the whole apparent diameter of the cavity in which they were placed, not exceeding the tenth of an inch.

When we consider the general form of this animal, and particularly its bill and webbed feet, we shall readily perceive that it must be a resident in watery situations; that it has the habit of digging or burrowing in the banks of rivers, or under ground; and that its food consists of aquatic plants and animals. This is all at present that can be reasonably guessed at: future observations, made in its native regions, will, it is hoped, afford us more ample information, and will make us fully acquainted with the natural history of an animal which differs so widely from all other quadrupeds, and which verifies in a most striking manner the observation of Buffon, "that whatever was possible for nature to produce has actually been produced."

On a subject so extraordinary as the present, a degree of scepticism is not only pardonable but laudable; and I ought perhaps to acknowledge, that I almost doubt the testimony of my own eyes, with respect to the structure of the animal's beak; yet must confess, that I can perceive no appearance of any deceptive preparation; and the edges of the gape of the mouth, the insertion, &c. when tried by the test of maceration in water, so as to render every part completely moveable, seem perfectly natural; nor can the most accurate examination of

expert anatomists discover any deception in this particular."

Other specimens have been brought into this country, by which all doubts of it being a peculiar and distinct quadruped are satisfactorily removed. Mr. Home examined one from the museum of Sir Joseph Banks; and discovered, that the beak was not the mouth of the animal, but merely a projection of the bones of the nose and palate instead of front teeth: that the cavity of the mouth was seated behind this bill-like projection, and contained two grinders on each side in both jaws: the tongue hardly half an inch long, and capable of being drawn into the mouth entirely. It is probable therefore, that the animal conveys its prey, by means of suction through this bill like protusion, into its proper mouth.]

CHAP. IX.

Of Animals of the Monkey Kind.*

QUADRUPEDS may be considered as a numerous groupe, terminated on every side by some that but in part deserve the name. On one quarter we see a tribe covered with quills, or furnished with wings, that lift them among the inhabitants of

* [The animals of this very extensive family are distinguished, by their having four front teeth in each jaw, all placed close together as in the human mouth: the canine teeth are longer than the rest, and a little distant from the grinders: the grinders are obtuse.]

air; on another, we behold a diversity clothed with scales and shells, to rank with insects; and still, on a third, we see them descending into the waters, to live among the mute tenants of that element. We now come to a numerous tribe, that, leaving the brute creation, seem to make approaches even to humanity; that bear an aukward resemblance of the human form, and discover some faint efforts at intellectual sagacity.

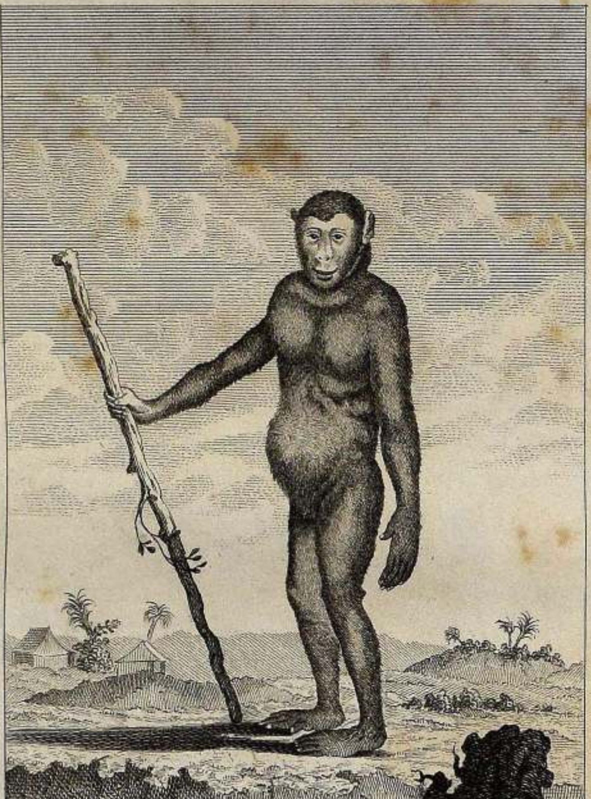
Animals of the monkey class are furnished with hands instead of paws: their ears, eyes, eye-lids, lips, and breasts, are like those of mankind; their internal conformation also bears some distant likeness; and the whole offers a picture that may well mortify the pride of such as make their persons alone the principal object of their admiration.

These approaches, however, are gradual; and some bear the marks of this our boasted form more strongly than others.

In the Ape kind we see the whole external machine strongly impressed with the human likeness, and capable of the same exertions: these walk upright, want a tail, have fleshy posteriors, have calves to their legs, and feet nearly like ours.

In the Baboon kind we perceive a more distant approach to the human form; the quadruped mixing in every part of the animal's figure: these generally go upon all fours; but some, when upright, are as tall as a man; they have short tails, long snouts, and are possessed of brutal fierceness.

The Monkey kind are removed a step further: these are much less than the former, with tails as long, or longer, than their bodies, and flattish faces.



De Sève del. Warner sc.

The Ouran-Outang.

Lastly, the Maki and Opossum kind, seem to lose all resemblance of the human figure, except in having hands: their noses are lengthened out, like those of quadrupeds, and every part of their bodies totally different from the human; however, as they grasp their food, or other objects, with one hand, which quadrupeds cannot do, this single similitude gives them an air of sagacity, to which they have scarcely any other pretensions.

From this slight survey it may be easily seen that one general description will not serve for animals so very different from each other: nevertheless, it would be fatiguing to the last degree, as their varieties are so numerous, and their differences so small, to go through a particular description of each. In this case it will be best to give an history of the foremost in each class; at the same time marking the distinctions in every species. By this we shall avoid a tedious repetition of similar characters, and consider the manners and the oddities of this fantastic tribe in general points of view; where we shall perceive how nearly they approach to the human figure, and how little they benefit by the approximation.

The foremost of the Ape kind is the Ourang Outang, or Wild Man of the Woods. This name seems to have been given to various animals, agreeing in one common character of walking upright, but coming from different countries, and of very different proportions and powers. The Troglodyte of Bontius, the Drill of Purchas, and the Pygmy of Tyson, have all received this general name; and have been ranked, by some naturalists, under one general description. If we read the accounts of

many remote travellers under this name we are presented with a formidable animal, from six to eight feet high; if we examine the books of such as have described it nearer home, we find it a pigmy not above three. In this diversity we must be content to blend their various descriptions into one general account; observing, at the same time, that we have no reason to doubt any of their relations, although we are puzzled which to follow.

The Ourang Outang, which of all other animals, most nearly approaches to the human race, is seen of different sizes, from three to seven feet high. In general, however, its stature is less than that of a man; but its strength and agility much greater. Travellers who have seen various kinds of these animals in their native solitudes, give us surprising relations of their force, their swiftness, their address, and their ferocity. Naturalists who have observed their form and manners at home, have been as much struck with their patient, pliant, imitative dispositions; with their appearance and conformation so nearly human. Of the smallest sort of these animals we have had several, at different times, brought into this country, all nearly alike; but that observed by Dr. Tyson, is the best known, having been described with the greatest exactness.

The animal which was described by that learned physician, was brought from Angola in Africa, where it had been taken in the internal parts of the country, in company with a female of the same kind, that died by the way. The body was covered with hair, which was of a coal black colour, more resembling human hair than that of brutes. It bore a still stronger similitude in its different

lengths; for in those places where it is longest on the human species, it was also longest in this; as on the head, the upper lip, the chin, and the pubes. The face was like that of a man, the forehead larger, and the head round. The upper and lower jaw were not so prominent as in monkies; but flat, like those of a man. The ears were like those of a man in most respects; and the teeth had more resemblance to the human, than those of any other creature. The bending of the arms and legs were just the same as in a man; and, in short, the animal, at first view, presented a figure entirely human.

In order to discover its differences, it was necessary to take a closer survey; and then the imperfections of its form began to appear. The first obvious difference was in the flatness of the nose; the next in the lowness of the forehead, and the wanting the prominence of the chin. The ears were proportionably too large; the eyes too close to each other; and the interval between the nose and mouth too great. The body and limbs differed, in the thighs being too short, and the arms too long; in the thumb being too little, and the palm of the hand too narrow. The feet also were rather more like hands than feet; and the animal, if we may judge from the figure, bent too much upon its haunches.

When this creature was examined anatomically, a surprising similitude was seen to prevail in its internal conformation. It differed from man in the number of its ribs, having thirteen; whereas, in man, there are but twelve. The vertebræ of the neck also were shorter, the bones of the pelvis narrower, the orbits of the eyes were deeper, the kidnies were rounder, the urinary and gall bladders

were longer and smaller, and the ureters of a different figure. Such were the principal distinctions between the internal parts of this animal and those of man; in almost every thing else they were entirely and exactly the same, and discovered an astonishing congruity. Indeed, many parts were so much alike in conformation, that it might have excited wonder how they were productive of such few advantages. The tongue, and all the organs of the voice, were the same, and yet the animal was dumb; the brain was formed in the same manner with that of man, and yet the creature wanted reason: an evident proof (as M. Buffon finely observes) that no disposition of matter will give mind; and that the body, how nicely soever formed, is formed in vain, when there is not infused a soul to direct its operations.

Having thus taken a comparative view of this creature with man, what follows may be necessary to complete the general description. This animal was very hairy all behind, from the head downwards; and the hair so thick, that it covered the skin almost from being seen: but in all parts before, the hair was much thinner, the skin every where appeared; and in some places it was almost bare. When it went on all fours, as it was sometimes seen to do, it appeared all hairy; when it went erect, it appeared before less hairy, and more like a man. Its hair, which in this particular animal was black, much more resembled that of men than the fur of brutes; for, in the latter, besides their long hair, there is usually a finer and shorter intermixed; but in the ourang outang it was all of a kind; only about the pubes the hair was greyish, seemed longer,

and somewhat different; as also on the upper lip and chin, where it was greyish, like the hair of a beard. The face, hands, and soles of the feet, were without hair; and so was most part of the forehead: but down the sides of the face the hair was thick, it being there about an inch and an half long, which exceeded that on any other part of the body. In the palms of its hands were remarkable those lines which are usually taken notice of in palmistry; and, at the tips of the fingers, those spiral lines observed in man. The palms of the hands were as long as the soles of the feet, and the toes upon these were as long as the fingers; the middle toe was the longest of all, and the whole foot differed from the human. The hinder feet being thus formed as hands, the animal often used them as such; and, on the contrary, now and then made use of its hands instead of feet. The breasts appeared small and shrivelled, but exactly like those of a man: the navel also appeared very fair, and in exact disposition, being neither harder nor more prominent than what is usually seen in children. Such is the description of this extraordinary creature; to which little has been added by succeeding observers, except that the colour of the hair is often found to vary: in that described by Edwards it was of a reddish brown.

From a picture so like that of the human species, we are naturally led to expect a corresponding mind; and it is certain that such of these animals as have been shewn in Europe, have discovered a degree of imitation beyond what any quadruped can arrive at.

That of Tyson was a gentle, fond, harmless creature. In its passage to England, those that it knew

on ship-board it would embrace with the greatest tenderness, opening their bosoms, and clasping its hands about them. Monkies of a lower species it held in utter aversion; it would always avoid the place where they were kept in the same vessel; and seemed to consider itself as a creature of higher extraction. After it was taken, and a little used to wear clothes, it grew very fond of them; a part it would put on without any help, and the rest it would carry in its hands to some of the company, for their assistance. It would lie in a bed, place its head on the pillow, and pull the clothes upwards, as a man would do.

That which was seen by Edwards, and described by Buffon, shewed even a superior degree of sagacity. It walked like all of its kind, upon two legs, even though it carried burthens. Its air was melancholy, and its deportment grave. Unlike the baboon or monkey, whose motions are violent, and appetites capricious, who are fond of mischief, and obedient only from fear, this animal was slow in its motions, and a look was sufficient to keep it in awe. I have seen it, says M. Buffon, give its hand to show the company to the door: I have seen it sit at table, unfold its napkin, wipe its lips, make use of the spoon and the fork to carry the victuals to its mouth, pour out its drink into a glass, touch glasses when invited, take a cup and saucer and lay them on the table, put in sugar, pour out its tea, leave it to cool before drinking; and all this without any other instigation than the signs or the command of its master, and often of its own accord. It was gentle and inoffensive; it even approached strangers with respect, and came rather to receive caresses than to

offer injuries. It was particularly fond of sugared comfits, which every body was ready to give it; and, as it had a defluxion upon the breast, so much sugar contributed to increase the disorder, and shorten its life. It continued at Paris but one summer, and died in London. It ate indiscriminately of all things, but it preferred dry and ripe fruits to all other aliments. It would drink wine, but in small quantities, and gladly left it for milk, tea, or any other sweet liquor.

Such these animals appeared when brought into Europe. However, many of their extraordinary habits were probably the result of education, and we are not told how long the instructions they received for this purpose were continued. But we learn from another account that they take but a very short time to come to a great degree of imitative perfection. Mr. L. Brosse bought two young ones, that were but a year old, from a Negroe; and these at that early age discovered an astonishing power of imitation *. They even then sat at the table like men, ate of every thing without distinction, made use of their knife, spoon, and fork, both to eat their meat and help themselves. They drank wine and other liquors. When carried on shipboard, they had signs for the cabin boys expressive of their wants; and whenever these neglected attending upon them as they desired, they instantly flew into a passion, seized them by the arm, bit them, and kept them down. The male was seasick, and required attendance like an human creature; he was even twice bled in the arm; and every

* As quoted by Buffon, vol. xxviii. p. 77.

time afterwards when he found himself out of order, he shewed his arm, as desirous of being relieved by bleeding.

Pyrard relates, that in the province of Sierra Leona, in Africa, there are a kind of apes, called Baris, which are strong and muscular, and which if properly instructed when young, serve as very useful domestics. The usually walk upright; they pound at a mortar; they go to the river to fetch water, this they carry back in a little pitcher, on their heads; but if care be not taken to receive the pitcher at their return they let it fall to the ground, and then, seeing it broken, they begin to lament and cry for their loss. Le Comte's account is much to the same purpose of an ape, which he saw in the Streights of Molucca. " It walked upon its two hind feet, which it bent a little, like a dog that had been taught to dance. It made use of its hands and arms as we do. Its visage was not much more disagreeable than that of an Hottentot; but the body was all over covered with a woolly hair of different colours. As to the rest, it cried like a child; all its outward actions were so like the human, and the passions so lively and significant, that dumb men could scarcely better express their conceptions and desires. It had also that expression of passion or joy which we often see in children, stamping with its feet, and striking them against the ground, to shew its spite, or when refused any thing it passionately longed for. Although these animals," continues he, " are very big, for that I saw was four feet high, their nimbleness is incredible. It is a pleasure beyond expression to see them run up the tackling of a ship, where they sometimes play as if

they had a knack of vaulting peculiar to themselves, or as if they had been paid, like our rope-dancers, to divert the company. Sometimes, suspended by one arm, they poise themselves, and then turn all of a sudden round about a rope, with as much quickness as a wheel, or a sling put into motion. Sometimes holding the rope successively with their long fingers, and, letting their whole body fall into the air, they run full speed from one end to the other, and come back again with the same swiftness. There is no posture but they imitate, nor motion but they perform. Bending themselves like a bow, rolling like a bowl, hanging by the hands, feet, and teeth, according to the different fancies with which their capricious imagination supplies them. But what is still more amazing than all is their agility to fling themselves from one rope to another, though at thirty, forty, and fifty feet distance."

Such are the habitudes and the powers of the smaller class of these extraordinary creatures; but we are presented with a very different picture in those of a larger stature and more muscular form. The little animals we have been describing, which are seldom found above four feet high, seem to partake of the nature of dwarfs among the human species, being gentle, assiduous, and playful, rather fitted to amuse than terrify. But the gigantic races of the Ourang Outang, seen and described by travellers, are truly formidable; and in the gloomy forests, where they are only found, seem to hold undisputed dominion. Many of these are as tall or taller than a man; active, strong, and intrepid, cunning, lascivious, and cruel. This redoubtable rival of mankind is found in many parts of Africa, in

the East Indies, in Madagascar and in Borneo*. In the last of these places, the people of quality course him as we do the stag; and this sort of hunting is one of the favourite amusements of the king himself. This creature is extremely swift of foot, endowed with extraordinary strength, and runs with prodigious celerity. His skin is all hairy, his eyes sunk in his head, his countenance stern, his face tanned, and all his lineaments, though exactly human, harsh and blackened by the sun. In Africa this creature is even still more formidable. Battel calls him the Pongo, and assures us that in all his proportions he resembles a man, except that he is much larger, even to a gigantic state. His face resembles that of a man, the eyes deep sunk in the head, the hair on each side extremely long, the visage naked and without hair, as also the ears and the hands. The body is lightly covered, and scarcely differing from that of a man, except that there are no calves to the legs. Still, however, the animal is seen to walk upon his hinder legs, and in an erect posture. He sleeps under trees, and builds himself an hut, which serves to protect him against the sun and the rains of the tropical climates, of which he is a native. He lives only upon fruits and is no way carnivorous. He cannot speak, although furnished with a greater instinct than any other animal of the brute creation. When the Negroes make a fire in the woods, this animal comes near and warms himself by the blaze. However, he has not skill enough to keep the flame alive by feeding it with fuel. They go together in companies; and if they

* Le Comte's History of China.

happen to meet one of the human species, remote from succour, they shew him no mercy. They even attack the elephant, which they beat with their clubs, and oblige to leave that part of the forest which they claim as their own. It is impossible to take any of these dreadful creatures alive, for they are so strong that ten men would not be a match for but one of them. None of this kind, therefore, are taken except when very young, and these but rarely, when the female happens to leave them behind, for in general they keep clung to the breast, and adhere both with legs and arms. From the same traveller we learn, that when one of these animals dies, the rest cover the body with a quantity of leaves and branches. They sometimes also shew mercy to the human kind. A Negroe boy, that was taken by one of these, and carried into the woods, continued there a whole year, without receiving any injury *. From another traveller we learn, that these animals often attempt to surprise the female Negroes as they go into the woods, and frequently keep them against their wills for the pleasure of their company, feeding them very plentifully all the time. He assures us that he knew a woman of Loango that had lived among these animals for three years. They grow from six to seven feet high, and are of unequalled strength. They build sheds, and make use of clubs for their defence. Their faces are broad, their noses flat, their ears without a tip, their skins are more bright than that of a Mulattoe, and they are covered on many parts of the body with long and tawny-coloured hair. Their

* Le Brosse, as quoted by Buffon, vol. xxviii. p. 70.

belly is large, their heels flat, and yet rising behind. They sometimes walk upright and sometimes upon all-fours, when they are fantastically disposed.

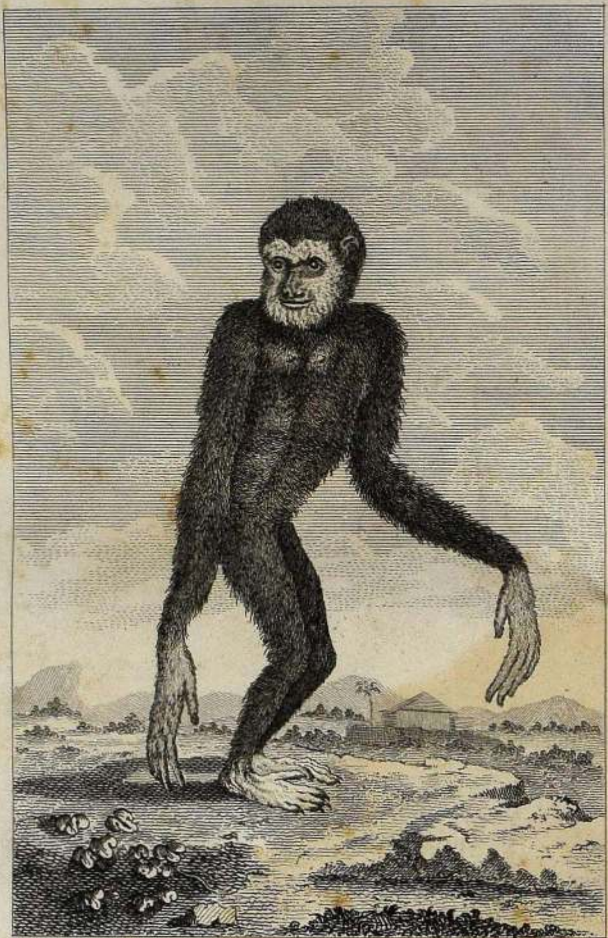
From this description of the Ourang Outang, we perceive at what a distance the first animal of the brute creation is placed from the very lowest of the human species. Even in countries peopled with savages, this creature is considered as a beast; and in those very places where we might suppose the smallest difference between them and mankind, the inhabitants hold it in the greatest contempt and detestation. In Borneo, where this animal has been said to come to its greatest perfection, the natives hunt it in the same manner as they pursue the elephant or the lion, while its resemblance to the human form procures it neither pity nor protection. The gradations of Nature in the other parts of nature are minute and insensible; in the passage from quadrupeds to fishes we can scarcely tell where the quadruped ends and the fish begins; in the descent from beasts to insects we can hardly distinguish the steps of the progression; but in the ascent from brutes to man, the line is strongly drawn, well marked, and unpassable. It is in vain that the Ourang Outang resembles man in form, or imitates many of his actions; he still continues a wretched, helpless creature, pent up in the most gloomy part of the forest, and, with regard to the provision for his own happiness, inferior even to the elephant or the beaver in sagacity. To us, indeed, this animal seems much wiser than it really is. As we have long been used to measure the sagacity of all actions by their similitude to our own, and not their fitness to the animal's way of living, we

are pleased with the imitations of the ape, even though we know they are far from contributing to the convenience of its situation. An ape, or a quadruped, when under the trammels of human education, may be an admirable object for human curiosity, but is very little advanced by all its learning in the road to its own felicity. On the contrary, I have never seen any of these long instructed animals that did not, by their melancholy air, appear sensible of the wretchedness of their situation. Its marks of seeming sagacity were merely relative to us, and not to the animal; and all its boasted wisdom was merely of our own making.

There is, in fact, another circumstance relative to this animal, which ought not to be concealed. I have many reasons to believe that the most perfect of the kind are prone, like the rest of the quadruped creation, and only owe their erect attitude to human education. Almost all the travellers who speak of them mention their going sometimes upon all-fours, and sometimes erect. As their chief residence is among trees, they are without doubt usually seen erect while they are climbing; but it is more probable that their efforts to escape upon the ground are by running upon the hands and feet together. Schouten, who mentions their education, tells us that they are taken in traps, and taught in the beginning to walk upon their hind legs; which certainly implies that in a state of nature they run upon all-fours. Add to this, that, when we examine the palms of their hands and the soles of their feet, we find both equally callous and beaten; a certain proof that both have been equally used. In those hot countries, where the apes are known to reside,

the soles of the Negroes feet, who go bare-foot, are covered with a skin above an inch thick; while their hands are as soft as those of an European. Did the apes walk in the same manner, the same exercise would have furnished them with similar advantages, which is not the case. Besides all this, I have been assured by a very credible traveller, that these animals naturally run in the woods upon all-fours; and when they are taken, their hands are tied behind them, to teach them to walk upright. This attitude they learn after some time; and, thus instructed, they are sent into Europe to astonish the speculative with their near approaches to humanity, while it is never considered how much is natural, and how much has been acquired in the savage schools of Benin and Angola *.

* [Mr. Vosmaer, in the year 1776, brought an Ouran Outang into Holland, and presented it to the menagerie of the Prince of Orange. From his accurate and satisfactory account of it, we learn many curious particulars of the disposition and manners of this singular animal. It was a female, about two Rhenish feet and a half in height. It exhibited no signs of fierceness or malignity, but was of a rather melancholy appearance. It was fond of society, and shewed an affectionate preference to those who took daily care of it: for when its attendants left it, it would throw itself on the ground as if in despair, and utter lamentable cries, tearing in pieces the linen within its reach. Its keeper having been accustomed to sit near it on the ground, it took the hay of its bed, laid it by its side, and seemed by every demonstration to invite him to be seated near. The usual manner of walking was on all fours, like other apes; but it could also walk on its two hind feet only. One morning it got unchained, and we beheld it with wonderful agility ascend the beams and rafters of the building: it was not without some trouble it was retaken; and we then remarked its extraordinary muscular power; the assistance of four men being necessary, in order to hold it while it was secured. During its liberty, it had among other things, taken the cork from a bottle



De Sere del. Warner sc.

The long armd Monkey.

The animal next to these, and to be placed in the same class, is the Ape, properly so called, or the Pithekos of the ancients. This is much less than the former, being not above a foot and an half high, but walks erect, is without a tail, and is easily tamed.

Of this kind also is the Gibbon, so called by Buffon, or the Long Armed Ape, which is a very extraordinary and remarkable creature. It is of different sizes, being from four feet to two feet high. It walks erect, is without a tail, has a face resem-

containing some Malaga wine, drank it every drop, and then put the bottle in its proper place. It ate almost whatever was given it; but its favorite food was bread, roots, and particularly carrots, all sorts of fruits, especially straw-berries; and was particularly fond of aromatic plants, as parsley and its roots. It also ate meat, both boiled and roasted, as well as fish. It was not observed to hunt for insects, like other monkies; but was fond of eggs, which it broke with its teeth and sucked completely. It had been taught to eat with a spoon and fork. When presented with straw-berries on a plate, it was extremely pleasant to see the animal take them up, one after another, with a fork, and put them into its mouth, holding the plate in the other hand. Its common drink was water; but it very willingly drank all sorts of wine, especially Malaga. After drinking it, it wiped its lips; and after eating, if presented with a tooth-pick, would use it in a proper manner. I was assured, that on shipboard it ran freely about the vessel, played with the sailors, and like them would go into the kitchen for its mess. At the approach of night it lay down to sleep, and prepared its bed by well shaking the hay on which it slept, and putting it in order, and then covering itself warm with the coverlet. One day, seeing the padlock of its chain opened with a key, and shut again, it seized a little bit of stick and put it into the key-hole, turning it about in all directions, endeavouring to see whether the padlock would open or not. On its first arrival, it had very little hair except on its back and arms; but on the approach of winter it became extremely well clothed with hair nearly three inches long. It lived seven months in Holland.]

bling that of a man, with a circle of bushy hair all round the visage; its eyes are large, and sunk in its head; its face tanned, and its ears exactly proportioned. But that in which it chiefly differs from all others of the monkey tribe is the extraordinary length of its arms, which when the animal stands erect, are long enough to reach the ground; so that it can walk upon all-fours, and yet keep its erect posture at the same time. This animal, next to the Ouran Outang and the Ape, most nearly resembles mankind, not only in form, but in gentle manners and tractable disposition. It is a native of the East Indies, and particularly found along the coasts of Coromandel.

The last of the ape kind is the Cynocephalus, or the Magot of Buffon. This animal wants a tail, like the former, although there is a small protuberance at that part, which yet is rather formed by the skin than the bone. It differs also in having a large callous red rump. The face is prominent, and approaches more to that of quadrupeds than of man. The body is covered with a brownish hair, and yellow on the belly. It is about three feet and an half, or four feet high, and is a native of most parts of Africa and the East. As it recedes from man in its form, so also it appears different in its dispositions, being sullen, vicious, and untractable *.

* Omnes femellæ hujusce et precedentium, ut et fere sequentium specierum menstruali patiuntur fluxu sicut in feminis.

[Caubasson relates a laughable story of an ape which he brought up tame, and which became so attached to him, as to be desirous of accompanying him wherever he went: whenever therefore he had to perform the service of his church, he shut him

De Seve del. Warner sc.

The Magot.

The Baboon.

DESCENDING from the more perfect of the monkey kinds, we come to the baboon and its varieties, a large, fierce, and formidable race, that, mixing the figure of the man and the quadruped in their conformation, seem to possess only the defects of both; the petulance of the one, and the ferocity of the other. These animals have a short tail; a prominent face; with canine teeth, larger than those of men, and callosities on the rump* In man the physiognomy may deceive, and the figure of body does not always lead to the qualities of the mind; but in animals we may always judge of their dispositions by their looks, and form a just conjecture of their internal habits from their external form. If we compare the nature of the ape and

up. Once, however, the animal escaped, and followed the father to church, where silently mounting on the top of the sounding board above the pulpit, he lay perfectly still till the sermon began. He then crept to the edge, and overlooking the preacher, imitated all his gestures in so grotesque a manner, that the whole congregation were unavoidably excited to laugh. The father, surprized and confounded at this ill-timed levity, reproved his audience for their inattention. The reproof failed in its effect, for the congregation still laughed, and the preacher in the warmth of his zeal redoubled his actions and his vociferations. These the ape so exactly imitated, that all respect for their pastor was swallowed up in the scene before them, and they burst out into a loud and continued roar of laughter. A friend of the preacher at length stepped up to him, and pointing out to him the cause of this improper conduct, it was with the utmost difficulty he could command a serious countenance, while he ordered the servants of the church to take the ape away.]

* Buffon, vol. xxviii. p. 183.

baboon by this easy rule, we shall at once be led to pronounce that they greatly differ in their dispositions, and that the latter are infinitely more fierce, savage, and malicious than the former. The ouran outang, that so nearly resembles man in its figure, approaches also nearest in the gentleness of its manners and the pliancy of its temper. The cynocephalus, that of all other apes is most unlike man in form, and approaches nearer the dog in face, resembles also the brute in nature, being wild, restless, and impelled by a fretful impetuosity. But the baboon, who is still more remote, and resembles man only in having hands, who, from having a tail, a prominent face, and sharp claws, approaches more nearly to the savage tribe, is every way fierce, malicious, ignorant, and untractable.

The baboon, properly so called, is from three to four feet high, very strong built, with a thick body and limbs, and canine teeth, much longer than those of men. It has large callosities behind, which are quite naked and red. Its tail is crooked and thick, and about seven or eight inches long. Its snout, for it can hardly be called a face, is long and thick, and on each side of its cheeks it has a pouch, into which, when satiated with eating, it puts the remainder of its provisions. It is covered with long thick hair of a reddish brown colour, and pretty uniform over the whole body. It walks more commonly upon all-fours than upright, and its hands as well as its feet are armed with long sharp claws, instead of the broad round nails of the ape kind.

An animal thus made for strength, and furnished with dangerous weapons, is found in fact to be one

of the most formidable of the savage race, in those countries where it is bred. It appears, in its native woods, to be impelled by two opposite passions; an hatred for the males of the human species, and a desire for women. Were we assured of these strange oppositions in its disposition from one testimony alone, the account might appear doubtful; but as it comes from a variety of the most credible witnesses, we cannot refuse our assent. From them, therefore, we learn that these animals will often assail women in a body, and force them into the woods, where they keep them against their will, and kill them when refractory. From the Chevalier Forbin we learn, that in Siam whole troops of these will often sally forth from their forests, and attack a village, when they know the men are engaged in their rice harvest. They are on such occasions actuated, as well by desire as by hunger; and not only plunder the houses of whatever provisions they can find, but endeavour to force the women. These, however, as the Chevalier humorously relates, not at all liking either the manners or the figure of the paltry gallants, boldly stand on their defence, and with clubs, or whatever other arms they can provide, instead of answering their caresses, oblige their ugly suitors to retreat; not, however, before they have damaged or plundered every thing eatable they can lay their hands on.

At the Cape of Good Hope they are less formidable, but to the best of their power equally mischievous. They are there under a sort of natural discipline, and go about whatever they undertake with surprising skill and regularity. When they set about

robbing an orchard or a vineyard, for they are extremely fond of grapes, apples, and ripe fruit, they do not go singly to work, but in large companies, and with preconcerted deliberation. On these occasions, a part of them enter the enclosure, while one is set to watch. The rest stand without the fence, and form a line reaching all the way from their fellows within to their rendezvous without, which is generally in some craggy mountain. Every thing being thus disposed, the plunderers within the orchard throw the fruit to those that are without as fast as they can gather it; or, if the wall or hedge be high, to those that sit on the top; and these hand the plunder to those next them on the other side. Thus the fruit is pitched from one to another all along the line, till it is safely deposited at their head quarters. They catch it as readily as the most skilful tennis player can a ball; and while the business is going forward, which they conduct with great expedition, a most profound silence is observed among them. Their centinel, during this whole time, continues upon the watch, extremely anxious and attentive; but if he perceives any one coming, he instantly sets up a loud cry, and at this signal the whole company scamper off. Nor yet are they at any time willing to leave the place empty-handed; for if they be plundering a bed of melons, for instance, they go off with one in their mouths, one in their hands, and one under their arm. If the pursuit is hot, they drop first that from under their arm, then that from their hand; and, if it be continued, they at last let fall that which they had hitherto kept in their mouths.

The natives of the Cape often take the young of

these animals, and, feeding them with sheep and goats milk, accustom them to guard their houses; which duty they perform with great punctuality. Those, however, that have been brought into Europe, are headstrong, rude, and untractable. Dogs and cats, when they have done any thing wrong, will run off; but these seem careless and insensible of the mischief they do; and I have seen one of them break a whole table of china, as it should seem by design, without appearing in the least conscious of having done amiss. It was not, however, in any respect so formidable as that described by M. Buffon, of which he gives the following description. "It was not," says he, "extremely ugly, and yet it excited horror. It continually appeared in a state of savage ferocity, gnashing its teeth, flying at the spectators, and furiously restless. It was obliged to be confined in an iron cage, the bars of which it so forcibly attempted to break, that the spectators were struck with apprehension. It was a sturdy bold animal, whose short limbs and powerful exertions shewed vast strength and agility. The long hair with which it was covered seemed to add to its apparent abilities; which, however, were in reality so great, that it could easily overcome more than a single man, unless armed. As to the rest, it for ever appeared excited by that passion which renders the mildest animals at intervals furious. Its lasciviousness was constant, and its satisfactions particular. Some others also of the monkey kind shewed the same degree of impudence, and particularly in the presence of women; but, as they were less in size, their petulance was less obvious, and their insolence more easily corrected."

But, however violent the desires of these animals may be, they are not found to breed in our climate. The female brings forth usually but one at a time, which she carries in her arms, and in a peculiar manner clinging to her breast. As to the rest, these animals are not at all carnivorous; they principally feed upon fruits, roots, and corn, and generally keep together in companies. The internal parts are more unlike those of man than of quadrupeds, particularly the liver, which is like that of a dog divided into six lobes. The lungs are more divided, the guts in general are shorter, and the kidnies rounder and flatter.

The largest of the Baboon kind is the Mandril; an ugly disgusting animal, with a tail shorter than the former, though of a much larger stature, being from four to five feet high. The muzzle is still longer than that of the preceding, it is of a bluish colour, and strongly marked with wrinkles, which give it a frightful appearance. But what renders it truly loathsome is, that from the nose there is always seen issuing a snot, which the animal takes care at intervals to lick off with its tongue and swallow. It is a native of the Gold Coast; it is said to walk more frequently erect than upon all fours; and when displeased, to weep like a child. There was one of them shewn in England some years ago. It seemed tame but stupid, and had a method of opening its mouth and blowing at such as came too near.

The Wanderow is a baboon rather less than the former, with the body less compact and muscular, and the hinder parts seemingly more feeble. The tail is from seven to eight inches long; the muzzle is prominent as in the rest of this kind; but what par-

De Seve del. Warner sc.

The Wanderow.

ticularly distinguishes it is a large long white head of hair, together with a monstrous white beard, coarse, rough, and descending; the colour of the rest of the body being brown or black. As to the rest, in its savage state, it is equally fierce with the others; but, with a proper education, it seems more tractable than most of its kind, and is chiefly seen in the woods of Ceylon and Malabar.

The Maimon of Buffon, which Edwards calls the Pigtail, is the last of the baboons, and in size rather approaches the monkey, being no larger than a cat. Its chief distinction, besides its prominent muzzle, like a baboon, is in the tail, which is about five or six inches long, and curled up like that of an hog, from which circumstance, peculiar to this animal, our English naturalist gave it the name. It is a native of Sumatra, and does not well endure the rigours of our climate. Edwards, however, kept one of them a year in London; and another of them happening at the same time to be exposed in a shew of beasts, he brought the two exiles together, to see if they would claim or acknowledge their kindred. The moment they came into each other's presence, they testified their mutual satisfaction, and seemed quite transported at the interview.

The Monkey.

THE varieties in the larger tribes of the monkey kind are but few; in the ape we have seen but four, and in the baboon about as many. But when we come to the smaller class, the differences among them seem too tedious for enumeration. These, as was

observed in the beginning, are all small in stature, and with long tails, by which they are distinguished from the preceding, that entirely want the tail, or are large and have but a short one. The varieties in the form and colour of dogs, or squirrels, is nothing to what are found among monkies of the smaller kind. Bosman mentions above fifty sorts on the Gold Coast alone, and Smith confirms the account. Condamine asserts that it would take up a volume to describe the differences of these to be found along the river Amazons; and we are sure that every one of these is very different from those on the African coast. Naturalists, however, have undertaken to make a catalogue of their numbers; and they either transmit their descriptions from one to another, or only enumerate those few that have found their way to Europe, and have fallen within the narrow circle of their own observation. But, though it may be proper enough to describe such as fall under notice, it is certainly wrong to offer a scanty catalogue as complete, and to induce the reader to suppose he sees a picture of the whole groupe of these animals, when he is only presented with a small part of the number. Such, therefore, as are fond of the reputation of adding new descriptions to the stock of natural history, have here a wide, though surely a barren, field to enlarge in; and they will find it no difficult matter, by observing the various animals of this kind that are from time to time brought from their native coasts to this country, to indulge in description, and to ring the changes upon all the technical terms with which this most pleasing science is obscured and rendered disgusting. For my own part, I will spare the reader and my-

self the trouble of entering into an elaborate description of each; content with observing once more, that their numbers are very great, and their differences very trifling. There is scarcely a country in the tropical climates that does not swarm with them, and scarcely a forest that is not inhabited by a race of monkies distinct from all others. Every different wood along the coasts of Africa may be considered as a separate colony of monkies, differing from those of the next district in colour, in size, and malicious mischief. It is indeed remarkable that the monkies of two cantons are never found to mix with each other, but rigourously to observe a seperation; each forest produces only its own; and these guard their limits from the intrusion of all strangers of a different race from themselves. In this they somewhat resemble the human inhabitants of the savage nations, among whom they are found, where the petty kingdoms are numerous, and their manners opposite. There, in the extent of a few miles, the traveller is presented with men speaking different languages, professing different religions, governed by different laws, and only resembling each other in their mutual animosity.

In general, monkies of all kinds, being less than the baboon, are endued with less powers of doing mischief. Indeed, the ferocity of their nature seems to diminish with their size; and when taken wild in the woods, they are sooner tamed, and more easily taught to imitate man, than the former. More gentle than the baboon, and less grave and sullen than the ape, they soon begin to exert all their sportive mimickries, and are easily restrained by correction. But it must be confessed that they

will do nothing they are desired without beating; for, if their fears be entirely removed, they are the most insolent and headstrong animals in nature.

In their native woods they are not less the pests of man than of other animals. The monkies, says a traveller*, are in possession of every forest where they reside, and may be considered as the masters of the place. Neither the tiger, nor the lion itself, will venture to dispute the dominion, since these, from the tops of trees continually carry on an offensive war, and by their agility escape all possibility of pursuit. Nor have the birds less to fear from their continual depredations; for, as these harmless inhabitants of the wood usually build upon trees, the monkies are for ever on the watch to find out and rob their nests; and such is their petulant delight in mischief, that they will fling their eggs against the ground when they want appetite or inclination to devour them.

There is but one animal in all the forest that ventures to oppose the monkey, and that is the serpent. The larger snakes are often seen winding up the trees where the monkies reside; and, when they happen to surprise them sleeping, swallow them whole, before the little animals have time to make a defence. In this manner, the two most mischievous kinds in all nature keep the whole forest between them; both equally formidable to each other, and for ever employed in mutual hostilities. The monkies in general inhabit the tops of the trees, and the serpents cling to the branches nearer the bottom; and in this manner they are for ever

* Description Historique de Macacar, p. 51.

seen near each other, like enemies in the same field of battle. Some travellers, indeed, have supposed that their vicinity rather argued their mutual friendship, and that they united in this manner to form an offensive league against all the rest of animated nature *. "I have seen these monkies," says Labat, "playing their gambols upon those very branches on which the snakes were reposing, and jumping over them without receiving any injury, although the serpents of that country were naturally vindictive, and always ready to bite whatever disturbed them." These gambols, however, were probably nothing more than the insults of an enemy that was conscious of its own safety; and the monkies might have provoked the snake in the same manner as we often see sparrows twitter at a cat. However this be, the forest is generally divided between them; and these woods, which Nature seems to have embellished with her richest magnificence, rather inspire terror than delight, and chiefly serve as retreats for mischief and malignity.

The enmity of these animals to mankind, is partly ridiculous, and partly formidable. They seem, says Le Comte and others, to have a peculiar instinct in discovering their foes; and are perfectly skilled, when attacked, in mutually defending and assisting each other. When a traveller enters among these woods, they consider him as an invader upon their dominions, and all join to repel the intrusion. At first they survey him with a kind of insolent curiosity. They jump from branch to branch, pursue him as he goes along, and make a loud chattering,

* Labat, Relat. de l'Afriq. Occident. p. 317.

to call the rest of their companions together. They then begin their hostilities by grinning, threatening, and flinging down the withered branches at him, which they break from the trees: they even take their excrements in their hands, and throw them at his head. Thus they attend him wherever he goes; jumping from tree to tree with such amazing swiftness, that the eye can scarcely attend their motions. Although they take the most desperate leaps, yet they are seldom seen to come to the ground, for they easily fasten upon the branches that break their fall, and stick, either by their hands, feet, or tail, wherever they touch. If one of them happens to be wounded, the rest assemble round, and clap their fingers into the wound, as if they were desirous of sounding its depth. If the blood flows in any quantity, some of them keep it shut up, while others get leaves, which they chew, and thrust into the opening: however extraordinary this may appear, it is asserted to be often seen, and to be strictly true. In this manner they wage a petulant, unequal war; and are often killed in numbers before they think proper to make a retreat. This they effect with the same precipitation with which they at first came together. In this retreat the young are seen clinging to the back of the female, with which she jumps away, seemingly unembarrassed by the burthen.

The curiosity of the Europeans has, in some measure, induced the natives of the places where these animals reside, to catch or take them alive by every art they are able. The usual way in such case, is to shoot the female as she carries her young, and then both, of course, tumble to the ground. But

even this is not easily performed; for if the animal be not killed outright, it will not fall; but clinging to some branch, continues, even when dead, its former grasp, and remains on the tree where it was shot, until it drops off by putrefaction. In this manner it is totally lost to the pursuer; for to attempt climbing the tree, to bring either it or the young one down, would probably be fatal, from the number of serpents that are hid among the branches. For this reason the sportsman always takes care to aim at the head; which, if he hits, the monkey falls directly to the ground; and the young one comes down at the same time, clinging to its dead parent.

The Europeans along the coasts of Guinea often go into the woods to shoot monkies; and nothing pleases the Negroes more than to see those animals drop, against which they have the greatest animosity. They consider them, and not without reason, as the most mischievous and tormenting creatures in the world; and are happy to see their numbers destroyed, upon a double account; as well because they dread their devastations, as because they love their flesh. The monkey, which is always skinned before it is eaten, when served up at a Negroe feast, looks so like a child, than an European is shocked at the very sight. The natives, however, who are not so nice, devour it as one of the highest delicacies; and assiduously attend our sportsmen, to profit by the spoil. But what they are chiefly astonished at, is to see our travellers carefully taking their young ones alive, while they leave them the old ones, that are certainly the most fit to be eaten. They cannot comprehend what advantage can arise

to us from educating or keeping a little animal, that, by experience, they know to be equally fraught with tricks and mischief: some of them have even been led to suppose, that, with a kind of perverse affection, we love only creatures of the most mischievous kinds; and having seen us often buy young and tame monkies, they have taken equal care to bring rats to our factors, offering them for sale, and greatly disappointed at finding no purchaser for so hopeful a commodity*.

The Negroes consider these animals as their greatest plague; and, indeed, they do incredible damage, when they come in companies to lay waste a field of Indian corn or rice, or a plantation of sugar-canes. They carry off as much as they are able; and they destroy ten times more than they bear away. Their manner of plundering is pretty much like that of the baboons already mentioned, in a garden. One of them stands centinel upon a tree, while the rest are plundering, carefully and cautiously turning on every side, but particularly to that on which there is the greatest danger: in the mean time, the rest of the spoilers pursue their work with great silence and assiduity; they are not contented with the first blade of corn, or the first cane that they happen to lay their hands on; they first pull up such as appear most alluring to the eye: they turn it round, examine, compare it with others, and if they find it to their mind, stick it under one of their shoulders. When in this manner they have got their load, they begin to think of retreating: but if it should happen that the owners of

* Labat, Relat. de l'Afriq. Occident. p. 317.

the field appear to interrupt their depredations, their faithful centinel instantly gives notice, by crying out, *Houp, houp, houp!* which the rest perfectly understand, and all at once throwing down the corn they hold in their left hands, scamper off upon three legs, carrying the remainder in the right. If they are still hotly pursued, they then are content to throw down their whole burthen, and to take refuge among their woods, on the tops of which they remain in perfect security.

Were we to give faith to what some travellers assure us, of the government, policies, and subordination of these animals, we might perhaps be taxed with credulity; but we have no reason to doubt that they are under a kind of discipline, which they exercise among each other. They are generally seen to keep together in companies, to march in exact order, and to obey the voice of some particular chieftain, remarkable for his size and gravity. One species of these, which M. Buffon calls the Ouarine, and which are remarkable for the loudness and the distinctness of their voice, are still more so for the use to which they convert it. "I have frequently been a witness," says Margrave, "of their assemblies and deliberations. Every day, both morning and evening, the ouarines assemble in the woods to receive instructions. When all come together, one among the number takes the highest place on a tree, and makes a signal with his hand to the rest to sit round, in order to hearken. As soon as he sees them placed he begins his discourse, with so loud a voice, and yet in a manner so precipitate, that to hear him at a distance, one would think the whole company were crying out at

the same time: however, during that time, one only is speaking; and all the rest observe the most profound silence. When this has done, he makes a sign with the hand for the rest to reply; and at that instant they raise their voices together, until by another signal of the hand they are enjoined silence. This they as readily obey; till, at last, the whole assembly breaks up, after hearing a repetition of the same preachment."

The chief food of the monkey-tribe is fruits, the buds of trees, or succulent roots and plants. They all, like man, seem fond of sweets; and particularly the pleasant juice of the palm-tree and the sugar-cane. With these the fertile regions in which they are bred seldom fail to supply them; but when it happens that these fail, or that more nourishing food becomes more agreeable, they eat insects and worms; and, sometimes, if near the coasts, descend to the sea-shore, where they eat oysters, crabs, and shell-fish. Their manner of managing an oyster is extraordinary enough; but it is too well attested, to fail of our assent. As the oysters in the tropical climates are generally larger than with us, the monkies, when they go to the sea-side, pick up a stone, and clap it between the opening shells: this prevents them from closing; and the monkey then eats the fish at his ease. They often also draw crabs from the water, by putting their tail to the hole where that animal takes refuge, and the crab fastening upon it, they withdraw it with a jerk, and thus pull their prey upon shore. This habit of laying traps for other animals, makes them very cautious of being entrapped themselves; and I am assured, by many persons of credit, that no snare, how

nicely baited soever, will take the monkey of the West-Indian islands; for having been accustomed to the cunning of man, it opposes its natural distrust to human artifice.

The monkey generally brings forth one at a time, and sometimes two. They are rarely found to breed when brought over into Europe; but of those that do, they exhibit a very striking picture of parental affection. The male and female are never tired of fondling their young one. They instruct it with no little assiduity; and often severely correct it, if stubborn, or disinclined to profit by their example: they hand it from one to the other; and when the male has done shewing his regard, the female takes her turn. When wild in the woods, the female, if she happens to have two, carries one on her back, and the other in her arms: that on her back clings very closely, clasping its hands round her neck, and its feet about her middle; when she wants to suckle it, she then alters their position; and that which has been fed gives place to the other, which she takes in her arms. It often happens that she is unable to leap from one tree to another, when thus loaden; and upon such occasions, their dexterity is very surprising. The whole family form a kind of chain, locking tail in tail, or hand in hand, and one of them holding the branch above, the rest swing down, balancing to and fro, like a pendulum, until the undermost is enabled to catch hold of the lower branches of some neighbouring tree. When the hold is fixed below, the monkey lets go that which was above, and thus comes undermost in turn; but, creeping up along the chain, attains the next branches, like the rest;

and thus they all take possession of the tree, without ever coming to the ground.

When in a state of domestic tameness, those animals are very amusing, and often fill up a vacant hour, when other entertainment is wanting. There are few that are not acquainted with their various mimickries, and their capricious feats of activity. But it is generally in company with other animals of a more simple disposition that their tricks and superior instincts are shewn; they seem to take a delight in tormenting them; and I have seen one of them amusing itself for hours together, in imposing upon the gravity of a cat. Erasmus tells us of a large monkey, kept by Sir Thomas More, that, one day diverting itself in his garden, where some tame rabbits were kept, played several of its usual pranks among them, while the rabbits scarcely well knew what to make of their new acquaintance: in the mean time, a weasel, that came for very different purposes than those of entertainment, was seen peering about the place in which the rabbits were fed, and endeavouring to make its way, by removing a board that closed their hutch. While the monkey saw no danger, it continued a calm spectator of the enemy's efforts; but just when, by long labour, the weasel had effected its purpose, and had removed the board, the monkey stept in, and, with the utmost dexterity, fastened it again in its place; and the disappointed weasel was too much fatigued to renew its operations. To this I will only add what Father Carli, in his history of Angola, assures us to be true. In that horrid country, where he went to convert the savage natives to Christianity, and met with nothing but distress

and disappointment; while his health was totally impaired by the raging heats of the climate, his patience exhausted by the obstinacy of the stupid natives, and his little provisions daily plundered, without redress; in such an exigency he found more faithful services from the monkies than the men; these he had taught to attend him, to guard him, while sleeping, against thieves and rats, to comb his head, to fetch his water; and, he asserts, that they were even more tractable than the human inhabitants of the place. It is indeed remarkable, that in those countries where the men are most barbarous and stupid, the brutes are most active and sagacious. It is in the torrid tracts, inhabited by Barbarians, that such various animals are found with instinct so nearly approaching reason. The savages both of Africa and America, accordingly suppose monkies to be men; idle, slothful, rational beings; capable of speech and conversation; but obstinately dumb, for fear of being compelled to labour.

As of all savages, those of Africa are the most brutal, so, of all countries, the monkies of Africa are the most expert and entertaining. The monkies of America are, in general, neither so sagacious nor so tractable, nor is their form so nearly approaching that of man. The monkies of the new continent may be very easily distinguished from those of the old, by three marks. Those of the ancient continent are universally found to have a naked callous substance behind, upon which they sit; which those of America are entirely without: those also of the ancient continent have the nostrils differently formed, more resembling those of men, the holes opening downward; whereas the

American monkies have them opening on each side; those of the ancient world have pouches on each side the jaw, into which they put their provisions, which those of America are without: lastly, none of the monkies of the ancient continent hang by the tail, which many of the American sorts are known to do. By these marks the monkies of either continent may be readily distinguished from each other, and prized accordingly. The African monkey, as I am assured, requires a longer education, and more correction, than that of America; but it is at last found capable of more various powers of imitation, and shews a greater degree of cunning and activity.

M. Buffon who has examined this race of imitative beings with greater accuracy than any other naturalist before him, makes but nine species of monkies belonging to the ancient continent; and eleven belonging to the new. To all these he gives the names which they go by in their respective countries; which, undoubtedly, is the method least liable to error, and the most proper for imitation.

Of the monkies of the ancient continent, the first he describes, is the Macaguo; somewhat resembling a baboon in size, strength of body, and an hideous wrinkled visage: it differs, however, in having a very long tail, which is covered with tufted hair. It is a native of Congo.

The second is the Patas, which is about the same size with the former; but differs, in having a longer body, and a face less hideous; it is particularly remarkable for the colour of its hair, which is of a red, so brilliant, that the animal looks as if it were

actually painted. It is usually brought from Senegal; and by some called the Red African Monkey.

The third of the ancient continent is the Malbrouk; of which he supposes the monkey which he calls the Bonet Chinois to be a variety. The one is remarkable for a long tail, and long beard; the other for a cap of hair, that covers the crown of the head, from whence it takes the name. Both are natives of the East Indies; and the Bramins, who extend their charity to all the brute creation, have hospitals for such of them as happen to be sick, or otherwise disabled.

The fourth of this kind is the Mangabey; this may be distinguished from all others, by its eye-lids, which are naked, and of a striking whiteness. It is a native of Madagascar.

The fifth is the Mona, or the Cephus of the ancients; it is distinguished by its colour, which is variegated with black and red; and its tail is of an ash-colour, with two white spots on each side, at its insertion. It is a native of the northern parts of Africa.

The sixth is the Callitrix, or Green Monkey of St. Iago; distinguished by its beautiful green colour on the back, its white breast and belly, and its black face.

The seventh is the Moustoc, or White Nose; distinguished by the whiteness of its lips, from whence it has received its name, the rest of the face being of a deep blue. It is a native of the Gold Coast, and a very beautiful little animal.

The eighth is the Talapoin; and may be distinguished as well by its beautiful variety of green

white, and yellow hair, as by that under the eyes, being of a greater length than the rest. It is supposed to be a native of Africa and the East.

The ninth and last of the monkies of the ancient continent, is the Douc, so called in Cochinchina, of which country it is a native. The douc seems to unite the characters of all the former together: with a long tail, like the monkey; of a size as large as the baboon; and with a flat face, like the ape: it even resembles the American monkies, in having no callosity on its posteriors. Thus it seems to form the shade by which the monkies of one continent are linked with those of the other.

Next come the monkies of the new continent; which, as hath been said, differ from those of the old, in the make of their nostrils, in their having no callosity on their posteriors, and in their having no pouches on each side of the jaw. They differ also from each other, a part of them making no use of their tails to hang by; while others of them have the tail very strong and muscular, and serving by way of a fifth hand to hold by. Those with muscular holding tails are called Sapajous; those with feeble useless tails are called Sagoins. Of the sapajous there are five sorts: of the sagoins there are six.

The first of the sapajous is the Warine, or the Brazilian Guariba. This monkey is as large as a fox, with black long hair, and remarkable for the loudness of its voice. It is the largest of the monkey kind to be found in America.

The second is the Coaiti; which may be distinguished from the rest, by having no thumb, and consequently, but four fingers on the two fore paws.

The tail, however, supplies the defects of the hand; and with this the animal slings itself from one tree to another, with surprising rapidity*.

The third is the Sajou; distinguished from the rest of the sapajous, by its yellowish, flesh-coloured face.

The fourth is the Sai. It is somewhat larger than the sajou, and has a broader muzzle. It is called also the Bewailer, from its peculiar manner of lamenting, when either threatened or beaten.

* [Captain Stedman, while hunting among the woods of Surinam for provisions, says, that he shot at two of these animals, with an intention of making broth of them. But the destruction of one of them, he says, was attended with such circumstances, as almost ever afterwards deterred him from going a monkey hunting.

"Seeing me nearly on the bank of the river in the canoe, the creature made a halt from skipping after his companions, and being perched on a branch that hung over the water, examined me with attention and the strongest marks of curiosity; no doubt taking me for a giant of his own species, while he chattered prodigiously, and kept dancing and shaking the boughs on which he rested, with incredible strength and agility. At this time I laid my piece to my shoulder, and brought him down from the tree into the stream: but may I never again be witness to such a scene! The miserable animal was not dead, but mortally wounded. I seized him by the tail; and taking him in both my hands to end his torment, swung him round, and hit his head against the side of the canoe; but the poor creature still continued alive, and looking at me in the most affecting manner that can be conceived, I knew no other means of ending his murder, than to hold him under the water till he was drowned, while my heart sickened on his account: for his dying little eyes still continued to follow me with seeming reproach, till their light gradually forsook them, and the wretched animal expired. I felt so much on this occasion, that I could neither taste of him or his companion when they were dressed, though I saw that they afforded to some others a delicious repast."]

The fifth and last of the sapajou kind, or monkies that hold by the tail, is the Samiri, or Aurora; which is the smallest and the most beautiful of all. It is of a fine orange colour, with two circles of flesh round the eyes. It is a very tender, delicate animal, and held in high price.

Of the sagoins with feeble tails, there are six kinds. The first and the largest, is the Saki, or Cagui; so remarkable for the length of the hair on its tail, that it has been often termed the Fox-tailed Monkey. It is of different sizes; some being twice as large as others.

The second of this kind is the Tamaim; which is usually black, with the feet yellow. Some, however, are found all over brown, spotted with yellow.

The third is the Wistiti; remarkable for the large tufts of hair upon its face, and its annulated tail.

The fourth is the Marikina; with a mane round the neck, and a bunch of hair at the end of the tail, like a lion.

The fifth is called the Pinch; with the face of a beautiful black, and white hair that descends on each side of the face, like that of man.

The last, least, and most beautiful of all is the Mico, an animal too curiously adorned, not to demand a particular description; which is thus given of it, by M. Condamine. "That," says he, which the governor of Para made me a present of, was the only one of its kind that was seen in the country. The hair on its body was of a beautiful silver colour, brighter than that of the most venerable human hair: while the tail was of a deep brown,

inclining to blackness. It had another singularity, more remarkable than the former; its ears, its cheeks, and lips, were tinctured with so bright a vermillion, that one could scarcely be led to suppose that it was natural. I kept it a year; and it was still alive when I made this description of it, almost within sight of the coasts of France: all I could then do, was to preserve it in spirits of wine, which might serve to keep it in such a state as to shew that I did not in the least exaggerate in my description."

Of The Maki.*

THE last of the monkey kind are the Makies; which have no other pretensions to be placed in this class, except that of having hands like the former, and making use of them to climb trees, or to pluck their food. Animals of the hare kind, indeed, are often seen to feed themselves with their fore paws, but they can hold nothing in one of them singly, and are obliged to take up whatever they eat in both at once: but it is otherwise with the maki; as well as the monkey kinds, they seize

* [The quadrupeds which compose this tribe, differ so materially in their appearance, shape, and manners, from any of the monkey kind, that naturalists have now consented to distinguish them by the common name of Lemur. They have four front teeth in the upper jaw, the intermediate ones of which are remote; in the lower jaw are six, which are longer, stretched forward, compressed, parallel, and placed close together: the canine teeth are single on each side in each jaw, and close to the grinders: the grinders are several, slightly lobed; the foremost of which are a little longer and sharper: some of them have tails, and some are naked.]

their food with one hand, pretty much like a man, and grasp it with great ease and firmness. The maki, therefore, from this conformation in its hands, both before and behind, approaches nearly to the monkey kind; but, in other respects, such as the make of the snout, the form of the ears, and the parts that distinguish the sexes, it entirely differs from them. There are many different kinds of these animals; all varying from each other in colour or size, but agreeing in the human-like figure of their hands and feet, and in their long nose, which somewhat resembles that of a dog. As most of these are bred in the depths of the forest, we know little more concerning them than their figure. Their way of living, their power of pursuit and escape can only be supposed, from the analogy of their conformation, somewhat to resemble those of the monkey.

The first of this kind is the Mococo; a beautiful animal, about the size of a common cat, but the body and limbs slenderer, and of a longer make. It has a very long tail, at least double the length of its body; it is covered with fur, and marked alternately with broad rings of black and white. But what it is chiefly remarkable for, besides the form of its hands and feet, is the largeness of its eyes, which are surrounded with a broad black space; and the length of the hinder legs, which by far exceed those before. When it sleeps, it brings its nose to its belly, and its tail over its head. When it plays, it uses a sort of galloping, with its tail raised over its back, which keeps continually in motion. The head is covered with dark ash-coloured hair; the back and sides with a red ash-colour, and not so

De Seve del. Warner sc.

The Mococo.

De Seve del. Warner sc.

The Lori.

dark as on the head; and the whole glossy, soft, and delicate, smooth to the touch, and standing almost upright, like the pile of velvet. It is a native of Madagascar; appears to be an harmless gentle animal; and though it resembles the monkey in many respects it has neither its malice nor its mischief: nevertheless, like the monkey, it seems to be always in motion and moves, like all four-handed animals, in an oblique direction.

A second of this kind, which is also a native of Madagascar, is the Mongoz; which is less than the former; with a soft, glossy robe, but a little curled. The nose also is thicker than that of the mococo; the eyes are black, with orange-coloured circles round the pupil; and the tail is of one uniform colour; as to the rest it is found of various colours; some being black, others brown; and its actions somewhat resemble those of a monkey.

The Vari is much larger than either of the former; its hair is much longer, and it has a kind of ruff round the neck, consisting of very long hair, by which it may be easily distinguished from the rest. It differs also in its disposition, which is fierce and savage; as also in the loudness of its voice, which somewhat resembles the roaring of the lion. This also is a native of Madagascar.

To this tribe we may refer a little fore-handed animal, of the island of Ceylon, which M. Buffon calls the Lori; very remarkable for the singularity of its figure. This is, of all other animals, the longest, in proportion to its size; having nine vertebræ in the loins; whereas other quadrupeds have only seven*. the body appears still the longer, by having no tail,

* Buffon, vol. xxvi. p. 274.

In other respects, it resembles those of the maki kind; as well in its hands and feet, as in its snout, and in the glossy qualities of its hair. It is about the size of a squirrel; and appears to be a tame, harmless little animal.

[Sir William Jones, in the fourth volume of the Asiatic Researches, gives a pleasing account of the manners of this little animal in a state of domestication.

"He was for the most part gentle; except in the cold season, when his temper seemed wholly changed; and his Creator who made him so sensible of cold, to which he must often have been exposed when in his native forests, gave him probably for that reason, his thick fur, which we rarely see on animals in these tropical climates. To me, who not only constantly fed him, but bathed him twice a week in water accommodated to the seasons, and whom he clearly distinguished from others, he was at all times grateful; but when I disturbed him in winter, he was usually indignant, and seemed to reproach me with the uneasiness he felt, though no possible precautions had been omitted to keep him in a proper degree of warmth. At all times he was pleased with being stroked on the head and throat, and frequently suffered me to touch his extremely sharp teeth; but his temper was always quick, and when he was unreasonably disturbed, he expressed a little resentment by an obscure murmur, like that of a squirrel, or a greater degree of displeasure by a peevish cry, especially in winter, when he was often as fierce on being much importuned, as any beast of the woods.

From half an hour before sun rise to half an hour before sunset, he slept without intermission,

rolled up like a hedge hog; and as soon as he awoke, he began to prepare himself for the labours of *his* approaching day, licking and dressing himself like a cat; an operation which the flexibility of his neck and limbs, enabled him to perform very completely: he was then ready for a slight breakfast; after which he commonly took a short nap; but when the sun was quite set, he recovered all his vivacity.

His ordinary food was the sweet fruit of this country; plantains always, and manyoes during the season; but he refused peaches, and was not fond of mulberries, or even quaiavas: milk he lapped easily, but was content with plain water. In general he was not voracious, but never appeared satisfied with grasshoppers; and passed the whole night while the hot season lasted, in prowling for them. When a grasshopper, or any insect, alighted within his reach, his eyes, which he fixed on his prey, glowed with uncommon fire; and having drawn himself back to spring on it with greater force, he seized his prey with both his fore-paws, but held it in one of them while he devoured it. For other purposes, and sometimes even for that of holding his food, he used all his paws indifferently as hands, and frequently grasped with one of them the higher part of his ample cage, while his three others were severally engaged at the bottom of it; but the posture of which he seemed fondest, was to cling with all four of them to the upper wires, his body being inverted. In the evening, he usually stood erect for many minutes, playing on the wires with his fingers, and rapidly moving his body from side to

side, as if he had found the utility of exercise in his unnatural state of confinement.

A little before day break, when my early hours gave me frequent opportunities of observing him, he seemed to solicit my attention; and if I presented my finger to him, he licked or nibbed it with great gentleness, but eagerly took fruit when I offered it; though he seldom eat much at his morning repast. When *the day brought back his night* his eyes lost their lustre and strength, and he composed himself for a slumber of ten or twelve hours."]

Of the Oppossum, and its Kinds *.

To these four-handed animals of the ancient continent, we may add the four-handed animals, of the new, that use their hands like the former, as well as their tails, and that fill up the chasm between the

* [The Oppossum has the front teeth small and rounded; in the upper jaw ten, the two middle ones of which are longer; in the lower jaw eight, the two middle ones of which are broader and very short: the canine teeth are long; and the grinders are indented: the tongue is fringed with pointed papillæ; and in most species the females are furnished with a pouch on the under part of the body, which conceals the teats, and serves as a receptacle to secure the young. They are a very numerous tribe, inhabiting various parts of the globe, and most of them feeding indifferently upon poultry, small birds, &c. and upon roots and fruit. Some of them have long scaly tails, by which, as in the sapajous, they can cling close to whatever they lay hold of, and which serves as a singular protection to the young in a state of imbecillity. Nature, even furnishing means proportionate to the end, has in that species where there is no abdominal pouch, given the young ones an instinctive method of preservation: these in the time of alarm or danger, spring on the back of their dam, and coiling their little

De Seve del. *Warner sc.*

The Oppofsum.

monkey tribe and the lower orders of the forest. As the maki kind in some measure seem to unite the fox and the monkey in their figure and size, so these seem to unite the monkey and the rat. They are all less than the former; they have long tails, almost bare of hair; and their fur, as well as their shape, seems to place them near the rat kind. Some have accordingly ranked them in that class; but their being four-handed, is a sufficient reason for placing them in the rear of the monkies.

The first and the most remarkable of this tribe is the Oppossum, an animal found both in North and South America, of the size of a small cat. The head resembles that of a fox; it has fifty teeth in all; but two great ones in the midst, like those of a rat. The eyes are little, round, clear, lively, and placed upright; the ears are long, broad, and transparent, like those of the rat kind; its tail also increases the similitude, being round, long, a little hairy in the beginning, but quite naked towards the end. The fore legs are short, being about three inches long; while those behind are about four. The feet are like hands, each having five toes or fingers, with white crooked nails, and rather longer behind than before. But it is particular in this animal, that the thumb on the hinder legs wants a nail; whereas the fingers are furnished with clawed nails as usual.

prehensile tails round hers, trust to her superior swiftness and cunning for safety. Some have the lateral flying membrane, like the flying squirrels; by which they can at pleasure spring to a vast distance. Of this kind is the oppossum of New Holland, described by Mr. White in his journal: it is of a fine greyish-sable, covered with fine close fur, nearly white underneath, with a long, very furry tail: it is perhaps the most beautiful of all known quadrupeds.]

But that which distinguishes this animal from all others, and what has excited the wonder of mankind for more than two centuries, is the extraordinary conformation of its belly, as it is found to have a false womb, into which the young, when brought forth in the usual manner, creep, and continue for some days longer, to lodge and suckle securely. This bag, if we may so call it, being one of the most extraordinary things in natural history, requires a more minute description. Under the belly of the female is a kind of slit or opening, of about three inches long; this opening is composed of a skin, which makes a bag internally, which is covered on the inside with hair, and in this bag are the teats of the female; and into it the young, when brought forth, retire, either to suckle or to escape from danger. This bag has a power of opening and shutting, at the will of the animal; and this is performed by means of several muscles, and two bones, that are fitted for this purpose, and that are peculiar to this animal only. These two bones are placed before the os pubis, to which they are joined at the base; they are about two inches long, and grow smaller and smaller to their extremities. These support the muscles that serve to open the bag, and give them a fixture. To these muscles there are antagonists, that serve, in the same manner, to shut the bag; and this they perform so exactly, that in the living animal the opening can scarcely be discerned, except when the sides are forcibly drawn asunder. The inside of this bag is furnished with glands, that exsude a musky substance, which communicates to the flesh of the animal, and renders it unfit to be eaten. It is not to be supposed that this

is the place where the young are conceived, as some have been led to imagine; for the oppossum has another womb, like that of the generality of animals, in which generation is performed in the ordinary manner. The bag we have been describing, may rather be considered as a supplemental womb. In the real womb, the little animal is partly brought to perfection; in the ordinary one, it receives a kind of additional incubation; and acquires, at last, strength enough to follow the dam wherever she goes. We have many reasons to suppose that the young of this animal are all brought forth prematurely, or before they have acquired that degree of perfection, which is common in other quadrupeds. The little ones, when first produced, are in a manner but half completed; and some travellers assert, that they are, at that time, not much larger than flies. We are assured also, that immediately on quitting the real womb, they creep into the false one; where they continue fixed to the teat, until they have strength sufficient to venture once more into the open air, and share the fatigues of the parent. Ulloa assures us, that he has found five of these little creatures hidden in the belly of the dam three days after she was dead, still alive, and all clinging to the teat with great avidity. It is probable, therefore, that upon their first entering the false womb, they seldom stir out from thence; but when more advanced, they venture forth several times in the day; and at last, seldom make use of their retreat, except in cases of necessity or danger. Travellers are not agreed in their accounts of the time which these animals take to continue in the false womb; some assure us, they remain there for

several weeks; and others, more precisely mention a month. During this period of strange gestation, there is no difficulty in opening the bag in which they are concealed; they may be reckoned, examined, and handled, without much inconvenience; for they keep fixed to the teat, and cling there as firm as if they made a part of the body of the animal that bears them. When they are grown stronger, they drop from the teat into the bag in which they are contained; and, at last, find their way out, in search of more copious subsistence. Still, however, the false belly serves them for a retreat; either when they want to sleep or to suckle, or when they are pursued by an enemy. The dam, on such occasions, opens her bag to receive them, which they enter,

——Pars formidine turpi
Scandunt rursus equum et nota conduntur in alvo.

The Oppossum, when on the ground, is a slow, helpless animal; the formation of its hands are alone sufficient to shew its incapacity of running with any degree of swiftness: but, to counterbalance this inconvenience, it climbs trees with great ease and expedition*. It chiefly subsists upon birds; and hides among the leaves of the trees, to seize them by surprize. It often also hangs by the tail, which is long and muscular; and, in this situation, for hours together, with the head downwards, it keeps watching for its prey. If any lesser animal, which it is able to overcome, passes underneath, it drops upon it with deadly aim, and quickly devours it. By means of its tail, the oppossum also slings from one tree to another, hunts insects,

* Buffon, vol. xxi. p. 174.

De Seve del. Warner sc.

The Cayopolin.

escapes its pursuers, and provides for its safety. It seems to be a creature that lives upon vegetables, as well as animal substances, roots, sugar-canes, the bark, and even the leaves of trees. It is easily tamed, but it is a disagreeable domestic, as well from its stupidity and figure, as its scent, which, however fragrant in small quantities, fails not to be ungrateful when copiously supplied.

An animal greatly resembling the former*, is the Marmose, which is found in the same continent. It seems only to differ in size, being less; and, instead of a bag to receive its young, has only two longitudinal folds near the thighs, within which the young, which are prematurely brought forth, as in the last instance, continue to suckle. The young of these, when first produced, are not above the size of a bean; but continue sticking to the teat, until they have arrived at greater maturity.

The Cayopolin is somewhat larger than the former; and a good deal resembling it in habits and figure, except that its snout is more pointed, its tail longer in proportion, and its colour different, being of an ash, somewhat inclining to yellow; however, I should suppose it to be only a variety of the former.

To this number we may add the phalanger, so called by M. Buffon; a good deal resembling the former, but distinguished by the fashion of its hinder hands: the thumb and the fore-finger being joined together, except at the extremities. This animal is about the size of a rat; and has, accordingly, by some, been called the Rat of Surinam.

The last animal of this class is called, by M. Buf-

* Buffon, vol. xxi. p. 212.

fon, the Tarsier. This extraordinary little animal resembles the former, in having four hands, and a long tail, but it differs very much in the extreme length of its hinder legs, which are longer than the rest of its whole body. The bones of that part of the foot called the tarsus, are likewise so very long, that from thence the animal has received its name: the tail is naked in the middle, and hairy only at both extremities: its hair is woolly, soft, and of a deep ash colour. As to the rest, it is unknown from what country this animal was brought; but the naturalists from whom we have its description supposes it to be a native of America.

From this general description of four-handed animals, we perceive what few advantages the brute creation derive from those organs that, in man, are employed to so many great and useful purposes. The being able to pluck their food from the trees, the capacity of clinging among the branches, or at most of converting one of those branches into a weapon of offence, are the highest stretches of their sagacity, and the only use their hands have hitherto been employed in: and yet, some superficial men have asserted, that the hands alone are sufficient to vindicate the dominion of mankind over other animals; and that much of his boasted reason, is nothing more than the result of his happier conformation: however, were this so, an ape or a monkey would in some instances be more rational than we; their fingers are smaller, and, in some of them, more finely formed than ours. To what a variety of purposes might they not be employed, if their powers were properly exerted! Those works which we, from the largeness of our fingers, are obliged to

De Seve del. Warner sc.

The Tarsier.

go clumsily about, one of these could very easily perform with the utmost exactness; and if the fineness of the hand assisted reason, an ape would be one of the most reasonable beings in the creation. But these admirably formed machines are almost useless both to mankind and themselves; and contribute little more to the happiness of animal life, than the paws of the lowest quadruped. They are supplied, indeed, with the organs; but they want the mind, to put them into action: it is that reasoning principle alone, with which man has been endowed, that can adapt seemingly opposite causes, to concur in the same general design; and even where the organs are deficient, that can supply their place by the intervention of assisting instruments. Where reason prevails, we find that it scarcely matters what the organs are that give it the direction; the being furnished with that principle, still goes forward, steadily and uniformly successful; breaks through every obstacle, and becomes master of every enterprize. I have seen a man, without hands or legs, convert, by practice, his very stumps to the most convenient purposes; and with these clumsy instruments perform the most astonishing feats of dexterity. We may therefore conclude, that it is the mind alone that gives a master to the creation; and that, if a bear or an horse were endowed with the same intellects that have been given to man, the hardness of an hoof, or the awkwardness of a paw, would be no obstacle to their advancement in the arts of dominion, or of social felicity.

[*Of the Kanguroo.*

NEARLY allied to the last kind in having a pouch for the security of its young, but differing in many other particulars of its form and manners, is the kanguroo. This has induced naturalists to separate them, and to give to each family its distinctive difference. These quadrupeds have six front teeth in the upper jaw, all of them notched at the end; two in the lower jaw, very large, long, sharp, and pointing forwards; the grinders are five on each side in both jaws, which are distant from the other teeth: the fore-legs are very short, the hind ones very long: in the female is an abdominal pouch.

Of this singular quadruped, only two species are known, both of them natives of New Holland. That which we are now describing was first discovered in the year 1770, during the voyage of our celebrated navigator Captain Cook. Its size is at least equal to that of a full grown sheep, but there is a remarkable disproportion in the shape; the head and neck being very small, while the lower parts gradually dilate to a very great size: the fore legs are hardly nineteen inches long, while the hinder ones measure three feet seven inches: the head bears some resemblance to that of the deer, having a mild and placid visage: the ears are moderately large and erect, the eyes large; and the mouth rather small. On the fore feet are five toes armed with strong sharp claws; on the hind feet are four toes, though they have at the first sight the appearance of being only three; the middle of those is

The Kanguroo.

remarkably large and disproportionate, being furnished with a claw of great size and strength; the exterior toe is far smaller than the middle one; the interior consists of two small toes covered by a common skin, and armed with two claws lying close together, and appearing like a split or double claw. The general colour is a fine pale brown, a little whiter underneath. From the great difference in length of the fore and hind legs, the pace of this animal consists in vast springs or bounds, which are said sometimes to exceed nine feet in height, and nearly twenty in length; and as these are repeated with much quickness, it must exceed most other quadrupeds in swiftness. In its state of rest it sits erect on the whole length of the hind feet, supporting itself by the base of the tail; for which purpose there is a blackish granulated callus on the hind feet. The tail is occasionally used as a weapon of defence, and is of such great strength, as to be able to break the leg of a man at a single blow. Within the abdominal pouch of the female are two breasts, each of them furnished with two teats; and from all we know at present, she brings forth but one at a time. The young ones, when first born, are extremely diminutive, hardly exceeding an inch in length, and twenty one grains in weight; and in the earlier periods of their growth, they reside entirely within the pouch of the dam, occasionally emerging for exercise or amusement, till they become able to shift for themselves. They feed entirely upon vegetables and drink by lapping. They live in burrows under ground, and seem to be nocturnal animals in their native state, as the eye is furnished with a membrane which it can extend at pleasure

over the whole ball. The flesh is said to be rather coarse, with something of the flavor of mutton. Upon the whole, this animal has rather an elegant and highly picturesque appearance; and has lately been in a great degree naturalised in England. In their wild state, they are said to feed in herds of thirty or forty together, and one is commonly observed to be stationed at a distance from the rest, as if on the watch.

The Rat kanguroo differs from that which has been just described, in being only of the size of a rabbit. The colour is brown with longer and coarser hair, ash coloured beneath; the ears are more rounded, and there are only four toes on the fore feet. On each side of the upper lip are several long whiskers, which are wanting in the great kanguroo; and in the upper jaw are eight front teeth instead of six. Its head is rather flattened sideways, and in its general appearance it is far less elegant and pleasing.]

CHAP. X.

*Of the Elephant.**

HAVING gone through the description of those quadrupeds that, by resembling each other in some striking particular, admit of being grouped toge-

* [The elephant has no front teeth in either jaw: in the upper jaw are two vast and long tusks, pointing downwards, and curved a little upwards: the upper jaw is lengthened out into a long cartilaginous trunk, with which it is able to lay hold of the most minute substances: the body is nearly destitute of hair.]

De Seve del.

Warner sc.

The Elephant.

ther and considered under one point of view, we now come to those insulated sorts that bear no similitude with the rest, and that to be distinctly described must be separately considered.

The foremost of these, and in every respect the noblest quadruped in nature, is the elephant, not less remarkable for its size than its docility and understanding. All historians concur in giving it the character of the most sagacious animal next to man; and yet, were we to take our idea of its capacity from its outward appearance, we should be led to conceive very meanly of its abilities. The elephant, at first view, presents the spectator with an enormous mass of flesh, that seems scarcely animated. Its huge body, covered with a callous hide, without hair; its large mis-shapen legs, that seem scarcely formed for motion; its little eyes, large ears, and long trunk, all give it an air of extreme stupidity. But our prejudices will soon subside when we come to examine its history; they will even serve to increase our surprize, when we consider the various advantages it derives from so clumsy a conformation.

The elephant is seen from seven to no less than fifteen feet high. Whatever care we take to imagine a large animal beforehand, yet the first sight of this huge creature never fails to strike us with astonishment, and in some measure to exceed our idea. Having been used to smaller animals, we have scarcely any conception of its magnitude; for a moving column of flesh, fourteen feet high, is an object so utterly different from those we are constantly presented with, that to be conceived it must be actually seen. Such, I own, were the sugges-

tions that naturally arose to me when I first saw this animal, and yet for the sight of which I had taken care to prepare my imagination. I found my ideas fall as short of its real size as they did of its real figure; neither the pictures I had seen, nor the descriptions I had read, giving me adequate conceptions of either.

It would, therefore, be impossible to give an idea of this animal's figure by a description; which, even assisted by the art of the engraver, will but confusedly represent the original. In general it may be observed, that the forehead is very high and rising, the ears very large and dependant, the eyes extremely small, the proboscis, or trunk, long, the body round and full, the back rising in an arch, and the whole animal short in proportion to its height. The feet are round at the bottom; on each foot there are five flat horny risings, which seem to be the extremities of the toes, but do not appear outwardly. The hide is without hair, full of scratches and scars, which it receives in its passage through thick woods and thorny places. At the end of the tail there is a tuft of hair, a foot and a half long. The female is less than the male, and the udder is between the fore legs. But a more accurate, as well as a more entertaining description of the parts, will naturally occur in the history of their uses.

Of all quadrupeds, the elephant is the strongest, as well as the largest; and yet, in a state of nature, it is neither fierce nor formidable*. Mild, peaceful, and brave, it never abuses its power or

* I have extracted the greatest part of this description from M. Buffon. Where I add, I mark with commas, "thus."

its strength, and only uses its force for its own protection, or that of its community. In its native deserts the elephant is seldom seen alone, but appears to be a social friendly creature. The oldest of the company conducts the band; that which is next in seniority brings up the rear. The young, the weak, and the sickly, fall into the centre; while the females carry their young, and keep them from falling by means of their trunks. They maintain this order only in dangerous marches, or when they desire to feed in cultivated grounds; they move with less precaution in the forests and solitudes; but without ever separating, or removing so far asunder as to be incapable of lending each other any requisite assistance. Nothing can be more formidable than a drove of elephants as they appear at a distance in an African landscape; wherever they march, the forests seem to fall before them; in their passage, they bear down the branches upon which they feed; and, if they enter into an inclosure, they destroy all the labours of the husbandman in a very short time. Their invasions are the more disagreeable, as there is no means of repelling them; since it would require a small army to attack the whole drove when united. It now and then happens that one or two is found lingering behind the rest, and it is against these that the art and force of the hunters are united; but an attempt to molest the whole body would certainly be fatal. They go forward directly against him who offers the insult, strike him with their tusks, seize him with their trunks, fling him into the air, and then trample him to pieces under their feet. But they are thus dreadful only when offended, and do no manner of

personal injury when suffered to feed without interruption. It is even said that they are mindful of injuries received; and, when once molested by man, seek all occasions for the future to be revenged; they smell him with their long trunks at a distance; follow him with all their speed upon the scent; and, though slow to appearance, they are soon able to come up with and destroy him.

In their natural state, they delight to live along the sides of rivers, to keep in the deepest vales, to refresh themselves in the most shady forest and watery places. They cannot live far from the water; and they always disturb it before they drink. They often fill their trunk with it, either to cool that organ, or to divert themselves by spurting it out like a fountain. They are equally distressed by the extremes of heat and cold; and, to avoid the former, they frequently take shelter in the most obscure recesses of the forest, or often plunge into the water, and even swim from the continent into islands some leagues distant from the shore.

Their chief food is of the vegetable kind, for they lothe all kind of animal diet. When one among their number happens to light upon a spot of good pasture, he calls the rest, and invites them to share in the entertainment; but it must be a very copious pasture indeed that can supply the necessities of the whole band. As with their broad and heavy feet they sink deep wherever they go, they destroy much more than they devour; so that they are frequently obliged to change their quarters, and to migrate from one country to another. The Indians and Negroes, who are often incommoded by such visitants, do all they can to keep them away, making

loud noises, and large fires round their cultivated grounds; but these precautions do not always succeed; the elephants often break through their fences, destroy their whole harvest, and overturn their little habitations. When they have satisfied themselves, and trod down or devoured whatever lay in their way, they then retreat into the woods in the same orderly manner in which they made their irruption.

Such are the habits of this animal, considered in a social light; and, if we regard it as an individual, we shall find its powers still more extraordinary. With a very aukward appearance, it possesses all the senses in great perfection, and is capable of applying them to more useful purposes than any other quadruped. The elephant, as we observed, has very small eyes, when compared to the enormous bulk of its body. But, though their minuteness may at first sight appear deformed, yet, when we come to examine them, they are seen to exhibit a variety of expression, and to discover the various sensations with which it is moved. It turns them with attention and friendship to its master; it seems to reflect and deliberate; and as its passions slowly succeed each other, their various workings are distinctly seen.

The elephant is not less remarkable for the excellence of its hearing. Its ears are extremely large, and greater in proportion than even those of an ass. They are usually dependent; but it can readily raise and move them. They serve also to wipe its eyes, and to protect them against the dust and flies that might otherwise incommode them. It appears delighted with music, and very readily learns

to beat time, to move in measure, and even to join its voice to the sound of the drum and the trumpet.

This animal's sense of smelling is not only exquisite, but it is in a great measure pleased with the same odours that delight mankind. The elephant gathers flowers with great pleasure and attention; it picks them up one by one, unites them into a nosegay, and seems charmed with the perfume. The orange-flower seems to be particularly grateful both to its sense of taste and smelling; it strips the tree of all its verdure, and eats every part of it, even to the branches themselves. It seeks in the meadows the most odoriferous plants to feed upon; and in the woods it prefers the coco, the banana, the palm, and the sago-tree, to all others. As the shoots of these are tender, and filled with pith, it eats not only the leaves and the fruits, but even the branches, the trunk, and the whole plant to the very roots.

But it is in the sense of touching that this animal excels all others of the brute creation, and perhaps even man himself. The organ of this sense lies wholly in the trunk, which is an instrument peculiar to this animal, and that serves it for all the purposes of an hand. The trunk is, properly speaking, only the snout lengthened out to a great extent, hollow like a pipe, and ending in two openings, or nostrils, like those of an hog. An elephant of fourteen feet high has the trunk about eight feet long, and five feet and an half in circumference at the mouth, where it is thickest. It is hollow all along, but with a partition running from one end of it to the other; so that though outwardly it appears like a single pipe, it is inwardly divided into two. This

fleshy tube is composed of nerves and muscles, covered with a proper skin of a blackish colour, like that of the rest of the body. It is capable of being moved in every direction, of being lengthened and shortened, of being bent or straightened, so pliant as to embrace any body it is applied to, and yet so strong that nothing can be torn from the gripe. To aid the force of this grasp, there are several little eminences, like a caterpillar's feet, on the underside of this instrument, which without doubt contribute to the sensibility of the touch, as well as to the firmness of the hold. Through this trunk the animal breathes, drinks, and smells, as through a tube; and at the very point of it, just above the nostrils, there is an extension of the skin, about five inches long, in the form of a finger, and which in fact answers all the purposes of one; for, with the rest of the extremity of the trunk, it is capable of assuming different forms at will, and, consequently, of being adapted to the minutest objects. By means of this, the elephant can take a pin from the ground, untie the knots of a rope, unlock a door, and even write with a pen. "I have myself seen," says Ælian, "an elephant writing Latin characters on a board, in a very orderly manner, his keeper only shewing him the figure of each letter. While thus employed, the eyes might be observed studiously cast down upon the writing, and exhibiting an appearance of great skill and erudition." It sometimes happens that the object is too large for the trunk to grasp; in such a case the elephant makes use of another expedient as admirable as any of the former. It applies the extremity of the trunk to the surface of the object,

and, sucking up its breath, lifts and sustains such a weight as the air in that case is capable of keeping suspended. In this manner this instrument is useful in most of the purposes of life; it is an organ of smelling, of touching, and of suction; it not only provides for the animal's necessities and comforts, but it also serves for its ornament and defence.

But, though the elephant be thus admirably supplied by its trunk, yet, with respect to the rest of its conformation, it is unwieldy and helpless. The neck is so short that it can scarcely turn the head, and must wheel round in order to discover an enemy from behind. The hunters that attack it upon that quarter, generally thus escape the effects of its indignation; and find time to renew their assaults while the elephant is turning to face them. The legs are, indeed, not so inflexible as the neck, yet they are very stiff, and bend not without difficulty. Those before seem to be longer than the hinder; but, upon being measured, are found to be something shorter. The joints, by which they bend, are nearly in the middle, like the knee of a man; and the great bulk which they are to support makes their flexure ungainly. While the elephant is young, it bends the legs to lie down or to rise; but when it grows old, or sickly, this is not performed without human assistance; and it becomes, consequently, so inconvenient, that the animal chuses to sleep standing. The feet, upon which these massy columns are supported, form a base scarcely broader than the legs they sustain. They are divided into five toes, which are covered beneath the skin, and none of which appear to the eye; a kind of protu-

berance like claws are only observed, which vary in number from three to five. The apparent claws vary; the internal toes are constantly the same. The sole of the foot is furnished with a skin as thick and hard as horn, and which completely covers the whole under part of the foot.

To the rest of the elephant's incumbrances may be added its enormous tusks, which are unserviceable for chewing, and are only weapons of defence. These, as the animal grows old, become so heavy, that it is sometimes obliged to make holes in the walls of its stall to rest them in, and ease itself of the fatigue of their support. It is well known to what an amazing size these tusks grow; they are two in number, proceeding from the upper jaw, and are sometimes found above six feet long. Some have supposed them to be rather the horns than the teeth of this animal; but, besides their greater similitude to bone than to horn, they have been indisputably found to grow from the upper jaw, and not from the frontal bones, as some have thought proper to assert*. Some also have asserted, that these tusks are shed in the same manner as the stag sheds its horns; but it is very probable, from their solid consistence, and from their accidental defects, which often appears to be the effect of a slow decay, that they are as fixt as the teeth of other animals are generally found to be. Certain it is that the elephant never sheds them in a domestic state, but keeps them till they become inconvenient and cumbrous to the last degree. An account of the uses to which these teeth are applied, and the manner

* See Mr. Daubenton's description of the skeleton of this animal.

of chusing the best ivory, belongs rather to an history of the arts than of nature.

This animal is equally singular in other parts of its conformation; the lips and the tongue in other creatures serve to suck up and direct their drink or their food; but in the elephant they are totally inconvenient for such purposes; and it not only gathers its food with its trunk, but supplies itself with water by the same means. When it eats hay, as I have seen it frequently, it takes up a small wisp of it with the trunk, turns and shapes it with that instrument for some time, and then directs it into the mouth, where it is chewed by the great grinding teeth, that are large in proportion to the bulk of the animal. This pacquet, when chewed, is swallowed, and never ruminated again, as in cows or sheep, the stomach and intestines of this creature more resembling those of an horse. Its manner of drinking is equally extraordinary. For this purpose, the elephant dips the end of its trunk into the wafer, and sucks up just as much as fills that great fleshy tube completely. It then lifts up its head with the trunk full, and turning the point into its mouth, as if it intended to swallow trunk and all, it drives the point below the opening of the windpipe. The trunk being, in this position, and still full of water, the elephant then blows strongly into it at the other end, which forces the water it contains into the throat; down which it is heard to pour with a loud gurgling noise, which continues till the whole is blown down. From this manner of drinking, some have been led into an opinion that the young elephant sucks with its trunk, and not with its mouth; this however, is a fact which no tra-

valler has hitherto had an opportunity of seeing, and it must be referred to some future accident to determine*.

The hide of the elephant is as remarkable as any other part. It is not covered over with hair as in the generality of quadrupeds, but is nearly bare. Here and there indeed, a few bristles are seen growing in the scars and wrinkles of the body, and very thinly scattered over the rest of the skin; but in general the head is dry, rough, and wrinkled, and resembling more the bark of an old tree than the skin of an animal. This grows thicker every year; and, by a constant addition of substance, it at length contracts that disorder well known by the name of the elephantiasis, or Arabian leprosy; a disease to which man, as well as the elephant, is often subject. In order to prevent this, the Indians rub the elephant with oil, and frequently bathe it to preserve its pliancy. To the inconveniencies of this disorder is added another, arising from the great sensibility of those parts that are not callous. Upon these the flies settle in great abundance, and torment this animal unceasingly; to remedy which the elephant tries all its arts; uses not only its tail and trunk in the natural manner to keep them off, but even takes the branch of a tree, or a bundle of hay, to strike them off with. When this fails, it often gathers up the dust with its trunk, and

* [The young elephant, it is now known, does not suck by the trunk, but by the mouth only, as in all other quadrupeds; during which the trunk of the young is thrown back over the head. It is however highly remarkable, if what is related be true, that they do not attach themselves to their dams in particular, but suck indiscriminately the females of the whole herd.]

thus covers all the sensible places. In this manner it has been seen to dust itself several times a day, and particularly upon leaving the bath.

Water is as necessary to this animal as food itself. When in a state of nature, the elephant rarely quits the banks of the river, and often stands in water up to the belly. In a state of servitude, the Indians take equal care to provide a proper supply; they wash it with great address; they give it all the conveniencies for lending assistance to itself; they smooth the skin with a pumice-stone, and then rub it over with oils, essences, and odours.

It is not to be wondered at that an animal furnished with so many various advantages, both of strength, sagacity, and obedience, should be taken into the service of man. We accordingly find that the elephant, from time immemorial, has been employed either for the purposes of labour, of war, or of ostentation; to increase the grandeur of eastern princes, or to extend their dominions. We have hitherto been describing this animal in its natural state; we now come to consider it in a different view, as taken from the forest and reduced to human obedience. We are now to behold this brave harmless creature as learning a lesson from mankind, and instructed by him in all the arts of war, massacre, and devastation. We are now to behold this half-reasoning animal led into the field of battle, and wondering at those tumults and that madness which he is compelled to increase. The elephant is a native of Africa and Asia, being found neither in Europe nor America. In Africa he still retains his natural liberty. The savage inhabitants of that

part of the world, instead of attempting to subdue this powerful creature to their necessities, are happy in being able to protect themselves from his fury. Formerly, indeed, during the splendour of the Carthaginian empire, elephants were used in their wars, but this was only a transitory gleam of human power in that part of the globe; the natives of Africa have long since degenerated, and the elephant is only known among them from his devastations. However, there are no elephants in the northern parts of Africa at present, there being none found on this side of Mount Atlas. It is beyond the river Senegal that they are to be met with in great numbers, and so down to the Cape of Good Hope, as well as in the heart of the country. In this extensive region they appear to be more numerous than in any other part of the world. They are there less fearful of man: less retired into the heart of the forests, they seem to be sensible of his impotence and ignorance; and often come down to ravage his little labours. They treat him with the same haughty disdain which they shew to other animals, and consider him as a mischievous little being, that fears to oppose them openly.

But, although these animals are most plentiful in Africa, it is only in Asia that the greatest elephants are found, and rendered subservient to human command. In Africa, the largest do not exceed ten feet high; in Asia they are found from ten to fifteen. Their price increases in proportion to their size; and when they exceed a certain bulk, like jewels, their value then rises as the fancy is pleased to estimate.

The largest are entirely kept for the service of princes; and are maintained with the utmost magnificence, and at the greatest expense. The usual colour of the elephant is a dusky black, but some are said to be white; and the price of one of these is inestimable. Such a one is peculiarly appropriated for the monarch's own riding; he is kept in a palace, attended by the nobles, and almost adored by the people*. Some have said that these white elephants are larger than the rest†; others assert, that they are less; and still others entirely doubt their existence.

As the art of war is but very little improved in Asia, there are few princes of the East who do not procure and maintain as many elephants as they are able, and place great confidence on their assistance in an engagement. For this purpose, they are obliged to take them wild in their native forests and tame them; for the elephant never breeds in a state of servitude. It is one of the most striking peculiarities in this extraordinary creature, that his generative powers totally fail when he comes under the dominion of man; as if he seemed unwilling to propagate a race of slaves, to increase the pride of his conqueror. There is, perhaps, no other quadruped that will not breed in its own native climate, if indulged with a moderate share of freedom, and we know that many of them will copulate in every climate. The elephant alone has never been seen to breed; and though he has been reduced under the obedience of man for ages, the

* P. Vincent Marie. † P. Tachard.

duration of pregnancy in the female* still remains a secret. Aristotle, indeed, asserts, that she goes two years with young; that she continues to suckle her young for three years, and that she brings forth but one at a time; but he does not inform us of the manner in which it was possible for him to have his information. From authorities equally doubtful, we learn, that the little one is about as large as a wild boar, the instant it is brought forth; that its tusks do not yet appear, but that all the rest of its teeth are apparent; that at the age of six months it is as large as an ox, and its tusks pretty well grown; and that it continues, in this manner, for near thirty years, advancing to maturity. All this is doubtful; but it is certain, that, in order to recruit the numbers which are consumed in war, the princes of the East are every year obliged to send into the forests, and to use various methods to procure a fresh supply. Of all these numerous bands, there is not one that has not been originally wild; nor one that has not been forced into a state of subjection. Men themselves are often content to propagate a race of slaves, that pass down in this wretched state through successive generations; but the elephant, under subjection, is unalterably barren; perhaps from some physical causes which are as yet unknown.

The Indian princes having vainly endeavoured to multiply the breed of elephants, like that of other

* Multis persuasum est Elephantem non brutorum sed hominum more coire. Quod retro mingit non dubitatur. Sed ipse vidi marem hujusce speciei, in nostri regis stabulis super fæmellam itidem inclusam quadrupedum more silientem, pene paululum incurvato sed sufficienter recto.

animals, have been, at last, content to separate the males from the females, to prevent those accesses of desire, which debilitated, without multiplyi the species. In order to take them wild in the woods, a spot of ground is fixed upon, which is surrounded with a strong pallisade. This is made of the thickest and the strongest trees; and strengthened by cross bars, which give firmness to the whole. The posts are fixed at such distances from each other, that a man can easily pass between them; there being only one great passage left open, through which an elephant can easily come; and which is so contrived as to shut behind, as soon as the beast is entered. To draw him into this inclosure, it is necessary first to find him out in the woods; and a female elephant is conducted along into the heart of the forest, where it is obliged by its keeper to cry out for the male. The male very readily answers the cry, and hastens to join her; which the keeper perceiving, obliges her to retreat, still repeating the same cry, until she leads the animal into the inclosure already described, which shuts the moment he is entered. Still, however, the female proceeds calling, and inviting, while the male proceeds forward in the inclosure, which grows narrower all the way, and until the poor animal finds himself completely shut up, without the power of either advancing or retreating; the female, in the mean time, being let out by a private way, which she has been previously accustomed to. The wild elephant, upon seeing himself entrapped in this manner, instantly attempts to use violence; and, upon seeing the hunters, all his former desires only turn to fury. In the mean time the hun-

De Seve del. Warner sc.

The Racoon.

ters, having fixed him with cords, attempt to soften his indignation, by throwing buckets of water upon him in great quantities, rubbing the body with leaves, and pouring oil down his ears. Soon after, two tame elephants are brought, a male and a female, that caress the indignant animal with their trunks; while they still continue pouring water to refresh it. At last, a tame elephant is brought forward, of that number which is employed in instructing the new-comers, and an officer riding upon it, in order to shew the late captive that it has nothing to fear. The hunters then open the inclosure; and, while this creature leads the captive along, two more are joined on either side of it, and these compel it to submit. It is then tied by cords to a massy pillar provided for that purpose, and suffered to remain in that position for about a day and a night, until its indignation be wholly subsided. The next day it begins to be somewhat submissive; and, in a fortnight, is completely tamed like the rest. The females are taken when accompanying the males; they often come into these inclosures, and they shortly after serve as decoys to the rest. But this method of taking the elephant differs, according to the abilities of the hunter; the negroes of Africa, who hunt this animal merely for its flesh, are content to take it in pit-falls; and often to pursue it in the defiles of a mountain, where it cannot easily turn, and so wound it from behind till it falls.

The elephant, when once tamed, becomes the most gentle and obedient of all animals. It soon conceives an attachment for the person that attends it, caresses him, obeys him, and seems to

anticipate his desires. In a short time it begins to comprehend several of the signs made to it, and even the different sounds of the voice; it perfectly distinguishes the tone of command from that of anger or approbation, and it acts accordingly. It is seldom deceived in its master's voice; it receives his orders with attention, and executes them with prudence, eagerly, yet without precipitation. All its motions are regulated; and its actions seem to partake of its magnitude; being grave, majestic, and secure. It is quickly taught to kneel down, to receive its rider; it caresses those it knows with its trunk; with this salutes such as it is ordered to distinguish, and with this, as with an hand, helps to take up a part of its load. It suffers itself to be arrayed in harness; and seems to take a pleasure in the finery of its trappings. It draws either chariots, cannon, or shipping, with surprising strength and perseverance; and this with a seeming satisfaction, provided that it be not beaten without a cause, and that its master appears pleased with its exertions.

The elephant's conductor is usually mounted upon its neck, and makes use of a rod of iron to guide it, which is sometimes pointed, and at others bent into an hook. With this the animal is spurred forward, when dull or disobedient; but, in general, a word is sufficient to put the gentle creature into motion, especially when it is acquainted with its conductor. This acquaintance is often perfectly necessary; for the elephant frequently takes such an affection to its keeper, that it will obey no other; and it has been known to die for grief, when, in some sudden fit of madness, it has killed its conductor.

We are told, that one of these, that was used by the French forces in India for the drawing their cannon, was promised, by the conductor, a reward, for having performed some painful service; but being disappointed of its expectations, it slew him in a fury. The conductor's wife, who was a spectator of this shocking scene, could not restrain her madness and despair; but running with her two children in her arms, threw them at the elephant's feet, crying out, that since it had killed her husband, it might kill her and her children also. The elephant, seeing the children at his feet, instantly stopped, and moderating its fury, took up the eldest with its trunk, and placing him upon its neck, adopted him for its conductor, and obeyed him ever after with great punctuality.

But it is not for drawing burthens alone that the elephants are serviceable in war; they are often brought into the ranks, and compelled to fight in the most dangerous parts of the field of battle. There was a time, indeed, in India, when they were much more used in war than at present. A century or two ago, a great part of the dependence of the general was upon the number and the expertness of his elephants; but of late, since war has been contented to adopt fatal instead of formidable arts, the elephant is little used, except for drawing cannon, or transporting provisions. The princes of the country are pleased to keep a few for ornament, or for the purposes of removing their seraglios; but they are seldom led into a field of battle, where they are unable to withstand the discharge of fire-arms, and have been often found to turn upon their employers. Still, however, they are used in war, in the more remote parts of the East; in Siam, in Cochin-

China, in Tonquin, and Pegu. In all these places, they not only serve to swell the pomp of state, being adorned with all the barbarian splendour that those countries can bestow, but they are actually led into the field of battle, armed before with coats of mail, and loaded on the back each with a square tower, containing from five combatants to seven. Upon its neck sits the conductor, who goads the animal into the thickest ranks, and encourages it to increase the devastation; wherever it goes, nothing can withstand its fury; it levels the ranks with its immense bulk, flings such as oppose it into the air, or crushes them to death under its feet. In the mean time, those who are placed upon its back, combat as from an eminence, and fling down their weapons with double force, their weight being added to their velocity. Nothing, therefore, can be more dreadful, or more irresistible, than such a moving machine, to men unacquainted with the modern arts of war; the elephant, thus armed and conducted, raging in the midst of a field of battle, inspires more terror than even those machines that destroy at a distance, and are often most fatal when most unseen. But this method of combating is rather formidable than effectual: polished nations have ever been victorious over those semi-barbarous troops, that have called in the elephant to their assistance, or attempted to gain a victory by merely astonishing their opposers. The Romans quickly learned the art of opening their ranks, to admit the elephant; and thus seperating it from assistance, quickly compelled its conductors to calm the animal's fury, and to submit. It sometimes also happened that the elephant became impatient of control; and, instead of obey-

ing its conductor, turned upon those forces it was employed to assist. In either case, there was a great deal of preparation, to very little effect; for a single elephant is known to consume as much as forty men in a day.

At present, therefore, they are chiefly employed in carrying or drawing burthens, throughout the whole peninsula of India; and no animal can be more fitted by nature for this employment. The strength of an elephant is equal to its bulk, for it can, with great ease, draw a load that six horses could not remove: it can readily carry upon its back three or four thousand weight; upon its tusks alone it can support near a thousand; its force may also be estimated from the velocity of its motion, compared to the mass of its body. It can go, in its ordinary pace, as fast as an horse at an easy trot; and, when pushed, it can move as swiftly as an horse at full gallop. It can travel with ease fifty or sixty miles a day; and when hard pressed, almost double that distance. It may be heard trotting on at a great distance; it is easy also to follow it by the track, which is deeply impressed on the ground, and from fifteen to eighteen inches in diameter.

In India they are also put to other very disagreeable offices; for in some courts of the more barbarous princes, they are used as executioners; and this horrid task they perform with great dexterity: with their trunks they are seen to break every limb of the criminal at the word of command; they sometimes trample him to death, and sometimes impale him on their enormous tusks, as directed. In this the elephant is rather the servant of a cruel master, than a voluntary tyrant, since no other animal of the forest

is so naturally benevolent and gentle; equally mindful of benefits as sensible of neglect, he contracts a friendship for his keeper, and obeys him even beyond his capacity.

In India, where they were at one time employed in launching ships, a particular elephant was directed to force a very large vessel into the water; the work proved superior to its strength, but not to its endeavours; which, however, the keeper affected to despise. "Take away," says he, "that lazy beast, and bring another better fitted for service." The poor animal instantly upon this redoubled its efforts, fractured its scull, and died upon the spot.

In Delhi, an elephant, passing along the streets, put his trunk into a taylor's shop, where several people were at work. One of the persons of the shop, desirous of some amusement, pricked the animal's trunk with his needle, and seemed highly delighted with this slight punishment. The elephant, however, passed on without any immediate signs of resentment; but coming to a puddle filled with dirty water, he filled his trunk, returned to the shop, and spurted the contents over all the finery upon which the taylors were then employed.

An elephant in Adsmeer, which often passed through the bazar or market, as he went by a certain herb-woman, always received from her a mouthful of greens. Being one day seized with a periodical fit of madness, he broke his fetters, and, running through the market, put the crowd to flight; and, among others, this woman, who in her haste forgot a little child at her stall. The elephant, recollecting the spot where his benefactress was accus-

tomed to sit, took up the infant gently in his trunk, and conveyed it to a place of safety.

At the Cape of Good Hope it is customary to hunt those animals for the sake of their teeth. Three horsemen, well mounted, and armed with lances, attack the elephant alternately, each relieving the other, as they see their companion pressed, till the beast is subdued. Three Dutchmen, brothers who had made large fortunes by this business, determined to retire to Europe, and enjoy the fruits of their labours; but they resolved, one day before they went, to have a last chace by way of amusement: they met with their game, and began their attack in the usual manner; but, unfortunately, one of their horses falling, happened to fling his rider; the enraged elephant instantly seized the unhappy huntsman with his trunk, flung him up to a vast height in the air, and received him upon one of his tusks, as he fell; and then turning towards the other two brothers, as if it were with an aspect of revenge and insult, held out to them the impaled wretch, writhing in the agonies of death.

The teeth of the elephant are what produce the great enmity between him and mankind; but whether they are shed, like the horns of the deer, or whether the animal be killed to obtain them, is not yet perfectly known. All we have as yet certain is, that the natives of Africa, from whence almost all our ivory comes, assure us, that they find the greatest part of it in their forests; nor would, say they, the teeth of an elephant recompence them for their trouble and danger in killing it: notwithstanding, the elephants which are tamed by man are never known to shed their tusks; and from the hardness of their

substance, they seem no way analogous to deers horns.

The teeth of the elephant are very often found in a fossile state. Some years ago, two great grinding-teeth, and part of the tusk of an elephant, were discovered, at the depth of forty-two yards in a lead-mine, in Flintshire*.

The tusks of the Mammoth, so often found fossile in Siberia, and which are converted to the purposes of ivory, are generally supposed to belong to the elephant; however, the animal must have been much larger in that country than it is found at present, as those tusks are often known to weigh four hundred pounds; while those that come from Africa seldom exceed two hundred and fifty. These enormous tusks are found lodged in the sandy banks of the Siberian rivers; and the natives pretend that they belong to an animal which is four times as large as the elephant.

There have lately been discovered several enormous skeletons, five or six feet beneath the surface, on the banks of the Ohio, not remote from the river Miume in America, seven hundred miles from the sea-coast. Some of the tusks are near seven feet long, one foot nine inches in circumference at the base, and one foot near the point; the cavity at the root or base, nineteen inches deep. Besides their size, there are yet other differences, the tusks of the true elephant have sometimes a very slight lateral bend; these have a larger twist, or spiral curve, towards the smaller end: but the great and specific difference consists in the shape of the grinding-

* Pennant's Synopsis, p. 90.

De Seve del. Warner sc.

The Rhinoceros.

teeth; which in these newly found, are fashioned like the teeth of a carnivorous animal; not flat and ribbed transversely on their surface, like those of the modern elephant, but furnished with a double row of high and conic processes, as if intended to masticate, not to grind their food. A third difference is in the thigh bone, which is of a great disproportionable thickness to that of the elephant; and has also some other anatomical variations. These fossile bones have been also found in Peru and the Brazils; and, when cut and polished by the workers in ivory, appear, in every respect, similar. It is the opinion of Doctor Hunter that they must have belonged to a larger animal than the elephant; and differing from it, in being carnivorous. But as yet this formidable creature has evaded our search; and if, indeed, such an animal exists, it is happy for man that it keeps at a distance; since what ravage might not be expected from a creature, endued with more than the strength of the elephant, and all the rapacity of the tiger!

CHAP. XI.

Of the Rhinoceros.

NEXT to the elephant, the Rhinoceros is the most powerful of animals. It is usually found twelve feet long, from the tip of the nose to the insertion of the tail; from six to seven feet high; and the circumference of its body is nearly equal to its length. It is, therefore, equal to the elephant in bulk; and if it appears much smaller to the eye,

the reason is, that its legs are much shorter. Words can convey but a very confused idea of this animal's shape; and yet there are few so remarkably formed: its head is furnished with an horn, growing from the snout, sometimes three feet and an half long; and but for this, that part would have the appearance of the head of an hog; the upper lip, however, is much longer in proportion, ends in a point, is very pliable, serves to collect its food, and deliver it into the mouth: the ears are large, erect, and pointed; the eyes are small and piercing; the skin is naked, rough, knotty, and lying upon the body in folds, after a very peculiar fashion: there are two folds very remarkable; one above the shoulders, and another over the rump: the skin, which is of a dirty brown colour, is so thick as to turn the edge of a scymitar, and to resist a musquet-ball: the belly hangs low; the legs are short, strong, and thick, and the hoofs divided into three parts, each pointing forward.

Such is the general outline of an animal that appears chiefly formidable from the horn growing from its snout; and formed rather for war, than with a propensity to engage. This horn is sometimes found from three to three feet and an half long, growing from the solid bone, and so disposed, as to be managed to the greatest advantage. It is composed of the most solid substance; and pointed so as to inflict the most fatal wounds. The elephant, the boar, or the buffalo, are obliged to strike transversely with their weapons; but the rhinoceros employs all his force with every blow; so that the tiger will more willingly attack any other animal of the forest, than one whose strength is so justly employed. Indeed,

there is no force which this terrible animal has to apprehend: defended, on every side, by a thick horny hide, which the claws of the lion or the tiger are unable to pierce, and armed before with a weapon that even the elephant does not chuse to oppose. The missionaries assure us, that the elephant is often found dead in the forests, pierced with the horn of a rhinoceros; and though it looks like wisdom to doubt whatever they tell us, yet I cannot help giving credit to what they relate on this occassion, particularly when confirmed by Pliny. The combat between these two, the most formidable animals of the forests, must be very dreadful. Emanuel, king of Portugal, willing to try their strength, actually opposed them to each other; and the elephant was defeated.

But though the rhinoceros is thus formidable by nature, yet imagination has not failed to exert itself, in adding to its terrors. The scent is said to be most exquisite; and it is affirmed, that it consorts with the tiger. It is reported also, that when it has overturned a man, or any other animal, it continues to lick the flesh quite from the bone with its tongue, which is said to be extremely rough. All this, however, is fabulous: the scent, if we may judge from the expansion of the olfactory nerves, is not greater than that of an hog, which we know to be indifferent; it keeps company with the tiger, only because they both frequent watery places in the burning climates where they are bred; and as to its rough tongue, that is so far from the truth, that no animal of near its size has so soft a one. "I have often felt it myself," says Ladvocat, in his description of this animal; "it is

smooth, soft, and small, like that of a dog; and to the feel it appears as if one passed the hand over velvet. I have often seen it lick a young man's face who kept it; and both seemed pleased with the action."

The rhinoceros which was shewn at London in 1739, and described by Doctor Parsons, had been sent from Bengal. Though it was very young, not being above two years old, yet the charge of his carriage and food from India cost near a thousand pounds. It was fed with rice, sugar, and hay: It was daily supplied with seven pounds of rice, mixed with three of sugar, divided into three portions; it was given great quantities of hay and grass, which it chiefly preferred; its drink was water, which it took in great quantities. It was of a gentle disposition, and permitted itself to be touched and handled by all visitors, never attempting mischief, except when abused, or when hungry; in such a case, there was no method of appeasing its fury, but by giving it something to eat. When angry, it would jump up against the walls of its room, with great violence; and made many efforts to escape, but seldom attempted to attack its keeper, and was always submissive to his threats. It had a peculiar cry, somewhat a mixture between the grunting of an hog and the bellowing of a calf.

The age of these animals is not well known; it is said by some, that they bring forth at three years old, and if we may reason from analogy, it is probable they seldom live till above twenty. That which was shewn in London, was said, by its keeper, to be eighteen years old, and even at that age he

pretended to consider it as a young one; however, it died shortly after, and that probably in the course of nature.

The rhinoceros is a native of the deserts of Asia and Africa, and is usually found in those extensive forests, that are frequented by the elephant and the lion. As it subsists entirely upon vegetable food, it is peaceful and harmless among its fellows of the brute creation; but, though it never provokes to combat, it equally disdains to fly. It is every way fitted for war, but rests content in the consciousness of its security. It is particularly fond of the prickly branches of trees, and is seen to feed upon such thorny shrubs as would be dangerous to other animals, either to gather, or to swallow. The prickly points of these, however, may only serve to give a poignant relish to this animal's palate, and may answer the same grateful ends in seasoning its banquet, that spices do in heightening ours.

In some parts of the kingdom of Asia, where the natives are more desirous of appearing warlike than shewing themselves brave, these animals are tamed, and led into the field to strike terror into the enemy; but they are always an unmanageable and restive animal, and probably more dangerous to the employers, than those whom they are brought to oppose.

The method of taking them, is chiefly watching them, till they are found either in some moist or marshy place, where, like hogs, they are fond of sleeping and wallowing. They then destroy the old one with fire-arms, for no weapons, that are thrown by the force of man, are capable of entering this animal's hide. If, when the old one is de

stroyed, there happens to be a cub, they seize and tame it: these animals are sometimes taken in pitfalls, covered with green branches, laid in those paths which the rhinoceros makes in going from the forest to the river side.

There are some varieties in this animal, as in most others; some of them are found in Africa with a double horn, one growing above the other; this weapon, if considered in itself, is one of the strongest, and most dangerous, that Nature furnishes to any part of the animal creation. The horn is entirely solid, formed of the hardest bony substance, growing from the upper maxillary bone, by so strong an apophyse, as seemingly to make but one part with it. Many are the medicinal virtues that are ascribed to this horn, when taken in powder, but these qualities have been attributed to it without any real foundation, and make only a small part of the many fables which this extraordinary animal has given rise to.

CHAP. XII.

*Of the Hippopotamus**.

THE Hippopotamus is an animal as large, and not less formidable, than the rhinoceros; its legs are shorter, and its head rather more bulky, than that

* [The Hippopotamus has four front teeth in each jaw; the upper ones standing distant by pairs; the lower ones prominent, the two middle of which are the longest: the canine teeth are single; those of the lower jaw extremely large, curved, and obliquely cut at the ends: the feet are armed at the margin with four hoofs. It has only a single stomach, and does not ruminate: the stomach, however, has cells and divisions, in some degree resembling that of the camel. It feeds entirely on vegetables.]

The Hippopotamos.

of the animal last described. We have but few opportunities in Europe of examining this formidable creature minutely, its dimensions, however, have been pretty well ascertained, by a description, given us by Zerenghi, an Italian surgeon, who procured one of them to be killed on the banks of the river Nile. By his account it appears, that this terrible animal, which chiefly resides in the waters of that river, is above seventeen feet long, from the extremity of the snout to the insertion of the tail; above sixteen feet in circumference round the body, and above seven feet high: the head is near four feet long, and above nine feet in circumference. The jaws open about two feet wide, and the cutting teeth, of which it hath four in each jaw, are above a foot long.

Its feet in some measure resemble those of the elephant, and are divided into four parts. The tail is short, flat and pointed; the hide is amazingly thick, and though not capable of turning a musket-ball, is impenetrable to the blow of a sabre; the body is covered over with a few scattered hairs, of a whitish colour. The whole figure of the animal is something between that of an ox and an hog, and its cry is something between the bellowing of the one and the grunting of the other.

This animal, however, though so terribly furnished for war, seems no way disposed to make use of its prodigious strength against an equal enemy; it chiefly resides at the bottom of the great rivers and lakes of Africa, the Nile, the Niger, and the Zara; there it leads an indolent kind of life, and seems seldom disposed for action, except when excited by the calls of hunger. Upon such occasions, three or

four of them are often seen at the bottom of a river, near some cataract, forming a kind of line, and seizing upon such fish as are forced down by the violence of the stream. In that element they pursue their prey with great swiftness and perseverance; they swim with much force, and remain at the bottom for thirty or forty minutes without rising to take breath. They traverse the bottom of the stream, as if walking upon land, and make a terrible devastation where they find plenty of prey. But it often happens, that this animal's fishy food is not supplied in sufficient abundance, it is then forced to come upon land, where it is an awkward and unwieldy stranger; it moves but slowly, and, as it seldom forsakes the margin of the river, it sinks at every step it takes; sometimes, however, it is forced, by famine, up into the higher grounds, where it commits dreadful havock among the plantations of the helpless natives, who see their possessions destroyed, without daring to resist their invader. Their chief method is, by lighting fires, striking drums, and raising a cry, to frighten it back to its favourite element; and, as it is extremely timorous upon land, they generally succeed in their endeavours. But if they happen to wound, or otherways irritate it too closely, it then becomes formidable to all that oppose it: it overturns whatever it meets, and brings forth all its strength, which it seemed not to have discovered before that dangerous occasion. It possesses the same inoffensive disposition in its favourite element, that it is found to have upon land; it is never found to attack the mariners in their boats, as they go up or down the stream; but should they inadvertently strike against it, or otherwise

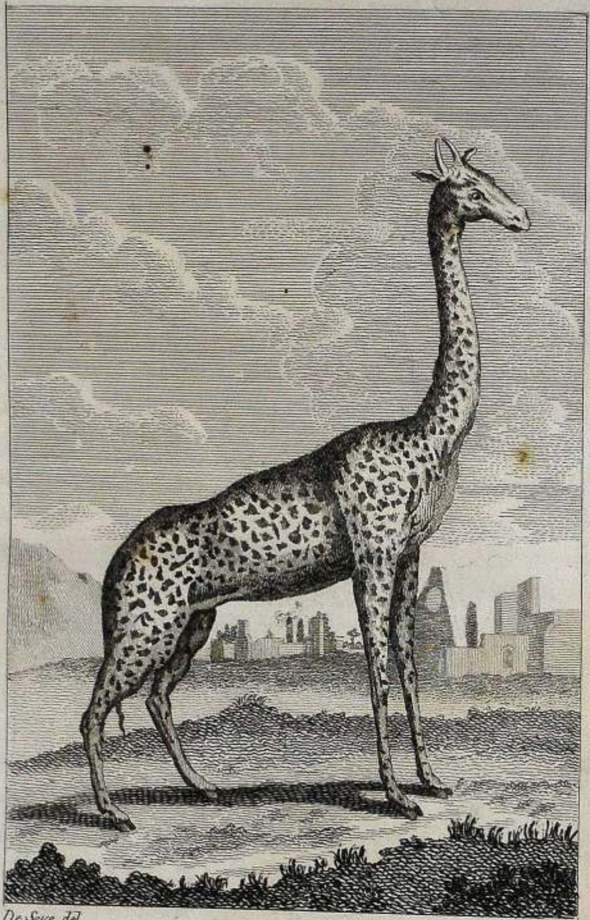
disturb its repose, there is much danger of its sending them, at once, to the bottom. "I have seen," says a mariner, as we find it in Dampier, "one of "these animals open its jaws, and seizing a boat "between his teeth, at once bite and sink it to the "bottom. I have seen it, upon another occasion, "place itself under one of our boats, and rising "under it, overset it with six men which were in "it; who, however, happily received no other in-"jury." Such is the great strength of this animal; and from hence, probably, the imagination has been willing to match it in combat against others more fierce, and equally formidable. The crocodile and shark have been said to engage with it, and yield an easy victory; but as the shark is only found at sea, and the hippopotamus never ventures beyond the mouth of fresh-water rivers, it is most probable that these engagements never occurred; it sometimes happens, indeed, that the princes of Africa amuse themselves with combats, on their fresh-water lakes, between this and other formidable animals; but whether the rhinoceros or the crocodile are of this number, we have not been particularly informed. If this animal be attacked at land, and finding itself incapable of vengeance from the swiftness of its enemy, it immediately returns to the river, where it plunges in head foremost, and after a short time rises to the surface, loudly bellowing, either to invite or intimidate the enemy; but though the negroes will venture to attack the shark, or the crocodile, in their natural element, and there destroy them, they are too well apprised of the force of the hippopotamus to engage it; this animal, therefore, continues the uncontrouled master of the river, and all

others fly from its approach, and become an easy prey.

As the hippopotamus lives upon fish and vegetables, so it is probable the flesh of terrestrial animals may be equally grateful; the natives of Africa assert, that it has often been found to devour children and other creatures that it was able to surprise upon land; yet as it moves but slowly, almost every creature, endued with a common share of swiftness, is able to escape it; and this animal, therefore, seldom ventures from the river side, but when pressed by the necessities of hunger, or of bringing forth its young.

The female always comes upon land to bring forth, and it is supposed that she seldom produces above one at a time; upon this occasion these animals are particularly timorous, and dread the approach of a terrestrial enemy; the instant the parent hears the slightest noise, it dashes into the stream, and the young one is seen to follow it with equal alacrity.

The young ones are said to be excellent eating; but the negroes, to whom nothing that has life comes amiss, find an equal delicacy in the old. Dr. Pococke has seen their flesh sold in the shambles, like beef; and it is said that their breast, in particular, is as delicate eating as veal. As for the rest, these animals are found in great numbers, and as they produce very fast, their flesh might supply the countries where they are found, could those barbarous regions produce more expert huntsmen; it may be remarked, however, that this creature, which was once in such plenty at the mouth of the Nile, is



De Seve del. Warner sc.

The Camelopard.

now wholly unknown in Lower Egypt, and is no where to be found in that river, except above the cataracts.

CHAP. XIII.

The Camelopard.

WERE we to be told of an animal so tall, that a man on horseback could with ease ride under its belly, without stooping, we should hardly give credit to the relation; yet, of this extraordinary size is the camelopard, an animal that inhabits the deserts of Africa, and the accounts of which are so well ascertained, that we cannot deny our assent to their authority. It is no easy matter to form an adequate idea of this creature's size, and the oddity of its formation. It exhibits somewhat the slender shape of the deer, or the camel, but destitute of their symmetry, or their easy power of motion. The head somewhat resembles that of the deer, with two round horns, near a foot long, and which, it is probable, it sheds as deer are found to do; its neck resembles that of an horse; its legs and feet, those of the deer; but with this extraordinary difference, that the fore legs are nearly twice as long as the hinder. As these creatures have been found eighteen feet high, and ten from the ground to the top of the shoulders, so allowing three feet for the depth of the body, seven feet remains, which is high enough to admit a man mounted upon a middle-sized horse. The hinder part, however, is much

lower, so that when the animal appears standing, and at rest, it has somewhat the appearance of a dog sitting; and this formation of its legs gives it an aukward and a laborious motion; which, though swift, must yet be tiresome. For this reason, the camelopard is an animal very rarely found, and only finds refuge in the most internal desart regions of Africa. The dimensions of a young one, as they were accurately taken by a person, who examined its skin, that was brought from the Cape of Good Hope, were found to be as follow: the length of the head, was one foot eight inches; the height of the fore leg, from the ground to the top of the shoulder, was ten feet; from the shoulder to the top of the head, was seven; the height of the hind leg, was eight feet five inches; and from the top of the shoulder to the insertion of the tail, was just seven feet long.

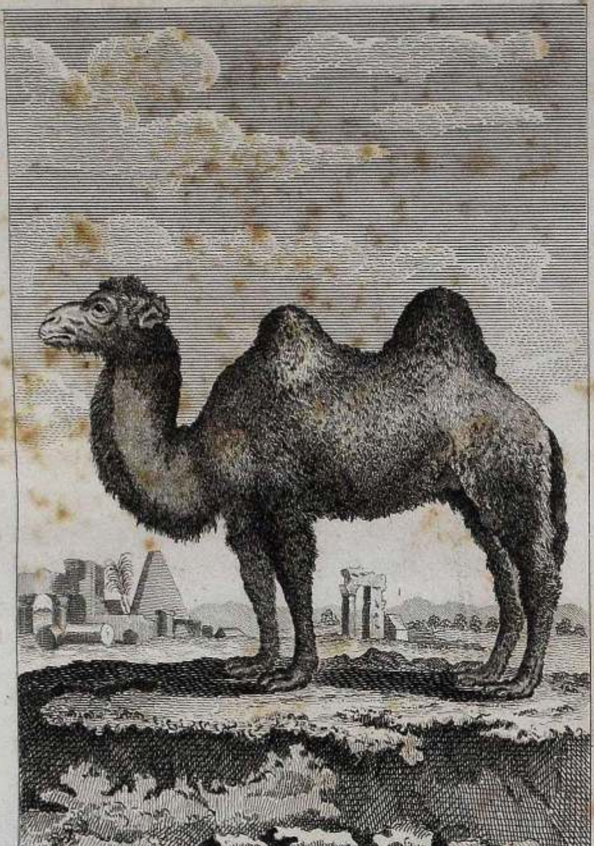
No animal, either from its disposition, or its formation, seems less fitted for a state of natural hostility; its horns are blunt, and even knobbed at the ends; its teeth are made entirely for vegetable pasture; its skin is beautifully speckled with brown spots, upon a whitish ground; it is timorous and harmless, and notwithstanding its great size, rather flies from, than resists the slightest enemy; it partakes very much of the nature of the camel, which it so nearly resembles; it lives entirely upon vegetables, and when grazing, is obliged to spread its fore legs very wide, in order to reach its pasture; its motion is a kind of pace, two legs on each side moving at the same time, whereas in other animals they move transversely. It often lies down with its belly to the earth, and, like the camel, has a cal-

lous substance upon its breast, which, when reposed, defends it from injury. This animal was known to the ancients, but has been very rarely seen in Europe. One of them was sent from the East to the emperor of Germany, in the year 1559, but they have often been seen tame at Grand Cairo, in Egypt; and I am told there are two there at present. When ancient Rome was in its splendour, Pompey exhibited, at one time, no less than ten, upon the theatre. It was the barbarous pleasure of the people, at that time, to see the most terrible, and the most extraordinary animals produced in combat against each other. The lion, the lynx, the tiger, the elephant, the hippopotamus, were all let loose promiscuously, and were seen to inflict indiscriminate destruction.

[The camelopard has short, simple, obtuse, permanent, long horns, covered with a bristly skin, and surrounded at their tips with a fringe of black hair: in the lower jaw are eight front teeth, the outer one on each side being deeply divided into two lobes. The head is extremely beautiful, something resembling that of a race horse; the mouth is small; and the eyes lively, and very open: between the eyes and above the nose, there is a very marked and prominent tubercle; this is not a fleshy excrescence, but a swelling of the bone, as are likewise the two little bunches or protuberances with which the back part of its head is armed, and which rise to the size of a hen's egg on each side from the root of its mane: the tongue is rough, and terminates in a point. Both the jaws have six grinders on each side; and in the upper jaw are no front teeth. The feet are cloven; they have no

heel; and much resemble those of the ox: but the fore feet are much larger than the hind: the leg is slender; but the knee is protuberant, owing to the animal's kneeling down to rest: there is also a great callosity before, which shows that it usually reposes on its breast. Its height when full grown, from the top of the head to the fore foot; is nearly seventeen feet; and at first sight the fore legs seem to be nearly as long again as the hinder, but this is occasioned merely by the extraordinary height of the shoulders compared with the thighs, all the legs being of nearly the same length. The neck is long and elegant, furnished with a slight mane; and as it exceeds the legs by at least four inches, besides the length of the head, it is evident it can graze without difficulty; and is not, as has been supposed, obliged to kneel down, or spread asunder its legs for this purpose. The tail is about the third part shorter than the hinder parts, round, tapering towards the tip, where it terminates in a tuft of long hair.

When the camelopard is standing still, and you see it in front; as the fore part of the body is much larger than the hind, it entirely conceals it; and the animal then resembles the trunk of a withered tree. Its gait in walking is neither awkward nor unpleasing, but it has a ridiculous kind of trot; however, its motions are sufficiently swift to outstrip the fleetest horse. Its defence is in its heels, and its hinder parts are so light, and its kicks so rapid, that the eye can scarcely follow them; and they are even sufficient to defend it against the lion, though not to repel the impetuous attack of the leopard. Like all other horned and cloven-



De Seve del. Warner sc.

The Camel.

footed quadrupeds, it ruminates, and feeds entirely upon vegetables; but its favourite food is the leaf of a tall kind of sensitive plant; peculiar to one district in Africa. Of its gestation or domestic habits, nothing is as yet known; but it is probable, that like all ruminant animals, it brings forth one or at farthest two young at a time.]

CHAP. XIV.

*The Camel, and the Dromedary.**

THESE names do not make two distinct kinds, but are only given to a variety of the same animal, which has, however, subsisted time immemorial. The principal, and perhaps the only sensible difference, by which those two races are distinguished, consists in this, that the camel has two bunches upon his back, whereas the dromedary has but one; the latter also, is neither so large, nor so strong, as the camel. These two races, however, produce with each other, and the mixed breed formed between them is considered the best, the most patient, and the most indefatigable of all the kind.

Of the two varieties, the dromedary is by far the most numerous; the camel being scarcely found except in Turky, and the countries of the Levant, while the other is found spread over all the deserts

* [These quadrupeds have six front teeth in the lower jaw, which are rather thin and broad: the canine teeth are a little remote from the rest; in the upper jaw there are three, in the lower two: the upper-lip divided; and there are no horns.]

of Arabia, the southern parts of Africa, Persia, Tartary, and a great part of the eastern Indies. Thus, the one inhabits an immense tract of country, the other, in comparison, is confined to a province; the one inhabits the sultry countries of the torrid zone, the other delights in a warm, but not a burning climate; neither, however, can subsist, or propagate, in the variable climates towards the north, they seem formed for those countries, where shrubs are plenty and water scarce; where they can travel along the sandy desert, without being impeded by rivers, and find food at expected distances; such a country is Arabia, and this, of all others, seems the most adapted to the support, and production of this animal.

The camel is the most temperate of all animals, and it can continue to travel several days without drinking. In those vast deserts, where the earth is every where dry and sandy, where there are neither birds nor beasts, neither insects nor vegetables, where nothing is to be seen but hills of sand and heaps of bone, there the camel travels, posting forward, without requiring either drink or pasture, and is often found six or seven days without any sustenance whatsoever. Its feet are formed for travelling upon sand, and utterly unfit for moist or marshy places; the inhabitants, therefore, find a most useful assistant in this animal, where no other could subsist, and by its means cross those deserts with safety, which would be unpassable by any other method of conveyance.

An animal, thus formed for a sandy and desert region, cannot be propagated in one of a different nature. Many vain efforts have been tried to propagate the

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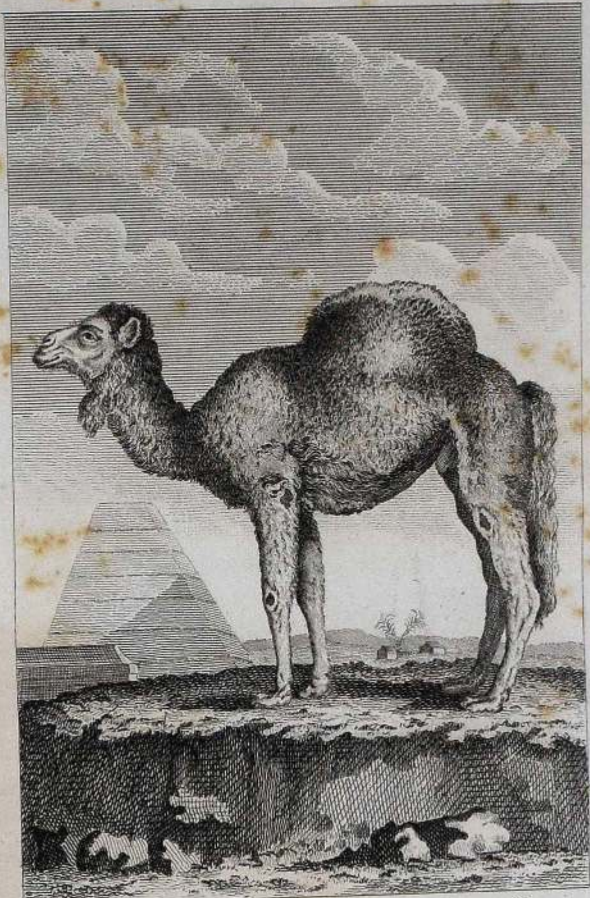


De Seve del. Warner sc.

The Dromedary.

camel in Spain; they have been transported into America, but have multiplied in neither. It is true, indeed, that they may be brought into these countries, and may, perhaps, be found to produce there, but the care of keeping them is so great, and the accidents to which they are exposed, from the changeableness of the climate, are so many, that they cannot answer the care of keeping. In a few years also, they are seen to degenerate; their strength and their patience forsake them; and instead of making the riches, they become the burthen of their keepers.

But it is very different in Arabia, and those countries where the camel is turned to useful purposes. It is there considered as a sacred animal, without whose help the natives could neither subsist, traffic, or travel; its milk makes a part of their nourishment; they feed upon its flesh, particularly when young; they clothe themselves with its hair, which it is seen to molt regularly once a year, and if they fear an invading enemy, their camels serve them in flight, and in a single day they are known to travel above an hundred miles. Thus, by means of the camel, an Arabian finds safety in his deserts; all the armies upon earth might be lost in the pursuit of a flying squadron of this country, mounted upon their camels, and taking refuge in solitudes where nothing interposes to stop their flight, or to force them to wait the invader. Nothing can be more dreary than the aspect of these sandy plains, that seem entirely forsaken of life and vegetation: wherever the eye turns, nothing is presented but a steril and dusty soil, sometimes torn up by the winds, and moving in great waves

along, which, when viewed from an eminence, resemble less the earth than the ocean; here and there a few shrubs appear that only teach us to wish for the grove—that remind us of the shade in these sultry climates, without affording its refreshment; the return of morning, which in other places carries an idea of chearfulness, here serves only to enlighten the endless and dreary waste, and to present the traveller with an unfinished prospect of his forlorn situation; yet in this chasm of nature, by the help of the camel, the Arabian finds safety and subsistence. There are here and there found spots of verdure, which, though remote from each other, are, in a manner, approximated by the labour and industry of the camel. Thus these deserts, which present the stranger with nothing but objects of danger and sterility, afford the inhabitant protection, food, and liberty. The Arabian lives independent and tranquil in the midst of his solitudes; and, instead of considering the vast solitudes spread round him as a restraint upon his happiness, he is, by experience, taught to regard them as the ramparts of his freedom.

The camel is easily instructed in the methods of taking up and supporting his burthen; their legs, a few days after they are produced, are bent under their belly; they are in this manner loaded, and taught to rise; their burthen is every day thus increased, by insensible degrees, till the animal is capable of supporting a weight adequate to its force; the same care is taken in making them patient of hunger and thirst: while other animals receive their food at stated times, the camel is restrained for days together, and these intervals of

famine are increased in proportion as the animal seems capable of sustaining them. By this method of education, they live five or six days without food or water; and their stomach is formed most admirably by Nature, to fit them for long abstinence: besides the four stomachs, which all animals have, that chew the cud, (and the camel is of the number) it has a fifth stomach, which serves as a reservoir, to hold a greater quantity of water than the animal has an immediate occasion for. It is of a sufficient capacity to contain a large quantity of water, where the fluid remains without corrupting, or without being adulterated by the other aliments: when the camel finds itself pressed with thirst, it has here an easy resource for quenching it; it throws up a quantity of this water by a simple contraction of the muscles, into the other stomachs, and this serves to macerate its dry and simple food; in this manner, as it drinks but seldom, it takes in a large quantity at a time; and travellers, when straightened for water, have been often known to kill their camels for that which they expected to find within them.

In Turky, Persia, Arabia, Barbary, and Egypt, their whole commerce is carried on by means of camels, and no carriage is more speedy, and none less expensive in these countries. Merchants and travellers unite themselves into a body, furnished with camels, to secure themselves from the insults of the robbers that infest the countries in which they live. This assemblage is called a caravan, in which the numbers are sometimes known to amount to above ten thousand, and the number of camels is often greater than those of the men: each of these

animals is loaded according to his strength, and he is so sensible of it himself, that when his burthen is too great, he remains still upon his belly, the posture in which he is laden, refusing to rise, till his burthen be lessened or taken away. In general, the large camels are capable of carrying a thousand weight, and sometimes twelve hundred; the dromedary from six to seven. In these trading journies, they travel but slowly, their stages are generally regulated, and they seldom go above thirty, or at most about five and thirty miles a day. Every evening, when they arrive at a stage, which is usually some spot of verdure, where water and shrubs are in plenty, they are permitted to feed at liberty; they are then seen to eat as much in an hour, as will supply them for twenty-four, they seem to prefer the coarsest weeds to the softest pasture, the thistle, the nettle, the cassia, and other prickly vegetables, are their favorite food; but their drivers take care to supply them with a kind of paste composition, which serves as a more permanent nourishment. As these animals have often gone the same track, they are said to know their way precisely, and to pursue their passage when their guides are utterly astray: when they come within a few miles of their baiting-place, in the evening, they sagaciously scent it at a distance, and increasing their speed, are often seen to trot with vivacity to their stage.

The patience of this animal is most extraordinary; and it is probable, that its sufferings are great, for when it is loaded, it sends forth most lamentable cries, but never offers to resist the tyrant that oppresses it. At the slightest sign it bends its knees and lies upon its belly, suffering itself to be loaded in this position; by this practice

the burthen is more easily laid upon it, than if lifted up while standing; at another sign it rises with its load, and the driver getting upon its back, between the two panniers, which, like hampers, are placed upon each side, he encourages the camel to proceed with his voice and with a song. In this manner the creature proceeds contentedly forward, with a slow uneasy walk, of about four miles an hour, and when it comes to its stage, lies down to be unloaded, as before*.

M. Buffon seems to consider the camel to be the most domesticated of all other creatures, and to have more marks of tyranny of man imprinted on its form. He is of opinion, that this animal is not now to be found in a state of nature, that the humps on its back, the callosities upon its breast, and its legs, and even the great reservoir for water, are all marks of long servitude and domestic constraint. The deformities he supposes to be perpetuated by generation, and what at first was accident at last becomes nature. However this be, the humps upon the back grow large in proportion as the animal is well fed, and if examined, they will be found composed of a substance not unlike the udder of a cow.

* [Mr. Sonnini says, he has sometimes seen them weary of the impatience of their riders, stop short, turn round their long necks to bite them, and utter cries of rage. In these circumstances the man must be careful not to alight, as he would infallibly be torn to pieces; he must also refrain from striking his beast, as that would but increase his fury: nothing can be done but to have patience; and appease the animal by patting him with the hand, which frequently requires some time, when he will resume his wonted pace of himself. Like the elephant, it has its periodical fits of rage, during which it has been known to take up a man in its teeth, throw him on the ground, and trample him under foot.]

The inhabitants generally leave but one male to wait on ten females, the rest they castrate; and though they thus become weaker, they are more manageable and patient. The female receives the male in the same position as when these animals are loaded; she goes with young for about a year, and, like all other great animals, produces but one at a time. The camel's milk is abundant and nourishing, and mixed with water makes a principal part of the beverage of the Arabians. These animals begin to engender at three years of age, and they ordinarily live from forty to fifty years. The genital part of the male resembles that of the bull, but is placed pointing backwards, so that its urine seems to be ejected in the manner of the female. This as well as the dung, and almost every part of this animal, is converted to some useful purpose by the keepers. Of the urine sal ammoniac is made; and of the dung, litter for the horses, and fire for the purpose of dressing their victuals. Thus, this animal alone seems to comprise within itself a variety of qualities, any one of which serves to render other quadrupeds absolutely necessary for the welfare of man; like the elephant, it is manageable and tame; like the horse, it gives the rider security; it carries greater burthens than the ox, or the mule; and its milk is furnished in as great abundance as that of the cow; the flesh of the young ones is supposed to be as delicate as veal; their hair is more beautiful, and more in request than wool; while even of its very excrements, no part is useless.

CHAP. XV.

The Lama.

AS almost all the quadrupeds of America are smaller than the resembling ones of the ancient continent, so the Lama, which may be considered as the camel of the new world, is every way less than that of the old. This animal, like that described in the former chapter, stands high upon its legs, has a long neck, a small head, and resembles the camel, not only in its natural mildness, but its aptitude for servitude, its moderation and its patience. The Americans early found out its useful qualities, and availed themselves of its labours: like the camel, it serves to carry goods over places inaccessible to other beasts of burthen; like that it is obedient to its driver, and often dies under, but never resists his cruelty.

Of these animals some are white, others black, but they are mostly brown; its face resembles that of the camel, and its height is about equal to that of an ass. They are not found in the ancient continent, but entirely belong to the new; nor are they found spread over all America, but are chiefly upon those mountains that stretch from New Spain to the Straits of Magellan. They inhabit the highest regions of the globe, and seem to require purer air than animals of a lower situation are found to enjoy. Peru seems to be the place where they are found in greatest plenty. In Mexico, they are introduced rather as curiosities than beasts of burthen; but in Potosi, and other provinces of Peru they make the

chief riches of the Indians and Spaniards who rear them: their flesh is excellent food; their hair, or rather wool, may be spun into beautiful cloathing, and they are capable, in the most rugged and dangerous ways, of carrying burthens not exceeding an hundred weight, with the greatest safety. It is true indeed that they go but slowly, and seldom above fifteen miles a day; their tread is heavy, but sure; they descend precipices, and find footing among the most craggy rocks, where even men can scarcely accompany them; they are, however, but feeble animals, and after four or five days labour, they are obliged to repose for a day or two. They are chiefly used in carrying the riches of the mines of Potosi; and we are told that there are above three hundred thousand of these animals in actual employ.

This animal, as was said before, is above three feet high, and the neck is three feet long, the head is small and well proportioned, the eyes large, the nose long, the lips thick, the upper divided, and the lower a little depending; like all those animals that feed upon grass, it wants the upper cutting teeth; the ears are four inches long, and move with great agility; the tail is but five inches long, it is small, strait, and a little turned up at the end; it is cloven-footed, like the ox, but it has a kind of spear-like appendage behind, which assists it in moving over precipices and rugged ways; the wool on the back is short, but long on the sides and the belly; it resembles the camel in the formation of the genital parts in the male, so that it makes urine backwards; it couples also in the same manner, and though it finds much difficulty in the action, it

is said to be much inclined to venery. A whole day is often passed, before this necessary business can be completed, which is spent in growling, quarrelling, and spitting at each other; they seldom produce above one at a time, and their age never extends above ten or twelve years at farthest.

Though the lama is no way comparable to the camel, either for size, strength, or perseverance, yet the Americans find a substitute in it, with which they seem perfectly contented. It appears formed for that indolent race of masters, which it is obliged to serve; it requires no care, nor no expense in the attending or providing for its sustenance; it is supplied with a warm covering, and therefore does not require to be housed; satisfied with vegetables and grass, it wants neither corn nor hay to subsist it; it is not less moderate in what it drinks, and exceeds even the camel in temperance. Indeed, of all other creatures, it seems to require water least, as it is supplied by Nature with saliva in such large quantities, that it spits it out on every occasion: this saliva seems to be the only offensive weapon that the harmless creature has to testify its resentment. When overloaded, or fatigued, and driven on by all the torturing acts of its keeper, it falls on its belly, and pours out against him a quantity of this fluid; which, though probably no way hurtful, the Indians are much afraid of. They say, that wherever it falls, it is of such an acrimonious nature, that it will either burn the skin, or cause very dangerous eruptions.

Such are these animals in their domestic state; but as they are found wild in very great numbers,

they exhibit marks of great force and agility, in their state of nature. The stag is scarcely more swift, or the goat, or the shammoy a better climber. All its shapes are more delicate and strong; its colour is tawney, and its wool is but short; in their native forests, they are gregarious animals, and are often seen in flocks of two or three hundred at a time. When they perceive a stranger, they regard him at first with astonishment, without marking any fear or surprise; but shortly, as if by common consent, they snuff up the air, somewhat like horses, and at once, by a common flight, take refuge on the tops of the mountains: they are fonder of the northern than the southern side of the Andes; they often climb above the snowy tracts of the mountain, and seem vigorous in proportion to the coldness of their situation. The natives hunt the wild lama for the sake of its fleece. If the dogs surprise one upon the plain, they are generally successful; but if once the lama obtains the rocky precipice of the mountain, the hunters are obliged to desist in their pursuit.

The lama seems to be the largest of the camel kind in America; there are others, which are called guanacoes and pacos, that are smaller and weaker, but endued with the same nature, and formed pretty much in the same manner. They seem to bear the same proportions to each other, that the horse does to the ass, and are employed with the same degree of subordination. The wool, however, of the paco, seems to be the most valuable, and it is formed into stuffs, not inferior to silk, either in price or beauty. The natural colour of the paco is that of a dried rose-leaf; the manufac-

turers seldom give its wool any other dye, but form it into quilts and carpets, which exceed those from the Levant. This manufacture forms a very considerable branch of commerce in South America, and probably too, might be extended to Europe, were the beauty and the durability of what is thus wrought up sufficiently known.

CHAP. XVI.

*The Nyl-ghau**

THIS animal, the name of which is pronounced Nylgaw, is a native of India, and has but lately been imported into Europe; it seems to be of a middle nature, between the cow and the deer, and carries the appearance of both in its form. In size, it is as much smaller than the one, as it is larger than the other; its body, horns, and tail, are not unlike those of a bull; and the head, neck, and legs, are very like those of a deer. The colour, in general, is ash or grey, from a mixture of black hairs and white; all along the ridge or edge of the neck, the hair is blacker, larger, and more erect, making a short thin and upright mane. Its horns are seven inches long, they are six inches round at the foot; growing smaller by degrees, they terminate in a blunt point. The bluntness of these, together with the form of its head and neck, might

* [This quadruped is a species of antelope: the horns are inclining to a triangular form; and the feet are barred with black and white.]

incline us to suppose it was of the deer kind; but, as it never sheds its horns, it has a greater affinity to the cow.

From the disposition of that brought over to this country, which has been very accurately and minutely described by Dr. Hunter, their manners were harmless and gentle. Although in its native wildness, it is said to be fierce and vicious, this seemed pleased with every kind of familiarity, and always licked the hand that stroked, or gave it bread, and never once attempted to use its horns offensively; it seemed to have much dependance on its organs of smell, and snuffed keenly, and with noise, whenever any person came within sight; it did so likewise, when any food or drink was brought to it; and was so easily offended with smells, or so cautious, that it would not taste the bread which was offered, when the hand happened to smell strong of turpentine. Its manner of fighting is very particular. It was observed, at Lord Clive's, where two males were put into a little inclosure, that, while they were at a considerable distance from each other, they prepared for the attack, by falling upon their fore-knees, then they shuffled towards each other, with a quick pace, keeping still upon their fore-knees, and when they were come within some yards, they made a spring, and darted against each other. The intrepidity and force with which they dart against any object, appeared by the strength with which one of them attempted to overturn a poor labourer who unthinkingly stood on the outside of the pales of its inclosure. The nyl-ghau, with the quickness of lightning, darted against the woodwork with such violence, that he broke it to pieces,

De Seve del.   Warner sc.

The Brown Bear.

and broke off one of his horns close to the root, which occasioned the animal's death. At all the places in India where we have settlements, they are considered as rarities, and brought from the distant interior parts of the country. The Emperor, sometimes, kills them in such numbers, as to distribute quarters of them to all his omrahs; which shews that they are internally wild and in plenty, and esteemed good or delicious food. The nylghaus, which have been brought to England, have been most, if not all of them, received from Surat, or Bombay; and they seem to be less uncommon in that part of India, than in Bengal; which gives room for a conjecture, that they may be indigenous, perhaps, in the province of Guzarat, one of the most western and the most considerable of the Hindostan empire, lying to the northward of Surat, and stretching away to the Indian ocean.

CHAP. XVII.

*The Bear**.

OF the Bear, there are three different kinds, the brown bear of the Alps, the black bear of North-

* [The animals of this kind, including the Racoon, Wolverene, Glutton, and Badger, have six front teeth in each jaw; the two lateral ones of the lower jaw are longer than the rest and lobed, and are likewise furnished with smaller or secondary teeth at their internal bases: the canine teeth are single: there are five or six grinders on each side; the first of which is placed close to the canine teeth: the tongue is smooth: the snout projecting; and the eyes furnished with a nictitant or winking membrane. The soles of

America, which is smaller, and the great Greenland, or white bear. These, though different in their form, are no doubt of the same original, and owe their chief variations to food and climate. They have all the same habitudes, being equally carnivorous, treacherous, and cruel. It has been said indeed, that the black bear of America rejects animal food, but of the contrary I am certain, as I have often seen the young ones, which are brought over to London, prefer flesh to every kind of vegetable aliment.

The brown bear is properly an inhabitant of the temperate climates; the black finds subsistence in the northern regions of Europe and America, while the great white bear takes refuge in the most icy climates, and lives where scarce any other animal can find subsistence.

The brown bear* is not only savage but solitary; he takes refuge in the most unfrequented parts, and the most dangerous precipices of uninhabited mountains. It chuses its den in the most gloomy parts of the forest, in some cavern that has been hollowed by time, or in the hollow of some old enormous tree. There it retires alone, and passes some months of the winter without provisions, or without ever stirring abroad. However, this animal is not entirely deprived of sensation, like the bat, or the dormouse, but seems rather to subsist upon the exuberance of its former flesh, and only feels the calls of appetite, when the fat it had acquired in sum-

the feet are long, and extend to the heel; some use their fore paws as hands, and they are all able to climb trees in search of prey, or to avoid an enemy.]

* Buffon.

mer begins to be entirely wasted away. In this manner, when the bear retires to its den, to hide for the winter, it is extremely fat, but at the end of forty or fifty days, when it comes forth to seek for fresh nourishment, it seems to have slept all its flesh away. It is a common report, that during this time they live by sucking their paws, which is a vulgar error that scarcely requires confutation. These solitary animals couple in autumn, but the time of gestation with the female is still unknown; the female takes great care to provide a proper retreat for her young; she secures them in the hollow of a rock, and provides a bed of hay in the warmest part of the den; she brings forth in winter, and the young ones begin to follow her in spring. The male and female, by no means inhabit the same den; they have each their separate retreat, and seldom are seen together but upon the accesses of genial desire.

The voice of the bear is a kind of growl, interrupted with rage, which is often capriciously exerted; and though this animal seems gentle and placid to its master, when tamed; yet it is still to be distrusted, and managed with caution, as it is often treacherous and resentful without a cause.

This animal is capable of some degree of instruction. There are few but have seen it dance in aukward measures upon its hind feet, to the voice or the instrument of its leader; and it must be confessed, that the dancer is often found to be the best performer of the two. I am told, that it is first taught to perform in this manner, by setting it upon hot plates of iron, and then playing to it, while in this uneasy situation.

The bear, when come to maturity, can never be tamed; it then continues in its native fierceness, and though caged, still formidably impotent, at the approach of its keeper flies to meet him. But notwithstanding the fierceness of this animal, the natives in those countries where it is found, hunt it with great perseverance and alacrity. The least dangerous method of taking it is by intoxicating it, by throwing brandy upon honey, which it seems to be chiefly fond of, and seeks for in the hollow of trees. In Canada, where the black bears are very common, and where their dens are made in trees, that are hollow towards the top, they are taken by setting fire to their retreats, which are often above thirty feet from the ground. The old one is generally seen first to issue from her den, and is shot by the hunters. The young ones, as they descend, are caught in a noose, and are either kept or killed for provision. Their paws are said to be a great delicacy, and their hams are well enough known at the tables of the luxurious here. Their fat also, which still preserves a certain degree of fluidity, is supposed to be an efficacious remedy in white or indolent tumours, though probably very little superior to hogs-lard.

The white Greenland bear differs greatly, both in figure and dimensions, from those already described; and though it preserves in general the external form of its more southern kindred, yet it grows to above three times the size. The brown bear is seldom above six feet long; the white bear is often known from twelve to thirteen. The brown bear is made rather strong and sturdy, like the mastiff; the Greenland bear, though covered with very

De Sere del. Warner sc.

The White Bear.

long hair, and apparently bulky, is nevertheless more slender, both as to the head, neck, and body, and more inclining to the shape of the grey-hound. In short, all the variations of its figure and its colour seem to proceed from the coldness of the climate where it resides, and the nature of the food it is supplied with.

The white bear seems the only animal, that by being placed in the coldest climate, grows larger than those that live in the temperate zones. All other species of animated nature diminish as they approach the poles, and seem contracted in their size, by the rigours of the ambient atmosphere; but the bear, being unmolested in these desolate climates, and meeting no animal, but what he can easily conquer, finding also a sufficient supply of fishy provisions, he grows to an enormous size; and as the lion is the tyrant of an African forest, so the bear remains undisputed master of the icy mountains in Spitzbergen and Greenland. When our mariners land upon those shores, in such parts as have not been frequented before, the white bears come down to view them with an aukward curiosity; they approach slowly, seeming undetermined whether to advance or retreat; and being naturally a timorous animal, they are only urged on by the conscious experience of their former victories; however, when they are shot at, or wounded, they endeavour to fly, or, finding that impracticable, they make a fierce and desperate resistance till they die. As they live upon fish and seals, their flesh is too strong for food, and the captors have nothing but the skin to reward them, for the dangers incurred in the engagement.

The number of these animals that are found about the north-pole, if we consider the scarcity there of all other terrestrial creatures, is very amazing. They are not only seen at land, but often on ice-floats, several leagues at sea. They are often transported in this manner to the very shores of Iceland, where they no sooner land, but all the natives are in arms to receive them. It often happens, that when a Greenlander and his wife are paddling out at sea, by coming too near an ice-float, a white bear unexpectedly jumps into their boat, and if he does not overset it, sits calmly where he first came down, and like a passenger suffers himself to be rowed along. It is probable the poor little Greenlander is not very fond of his new guest, however he makes a virtue of necessity, and hospitably rows him to shore.

As this animal lives chiefly upon fish, seals, and dead whales, it seldom removes far from the shore. When forced by hunger, it often ventures into the deep, swims after seals, and devours whatever it can seize; it is however but a bad swimmer, and it is often hunted in this manner by boats, till it is fatigued, and at last destroyed. It often happens that a battle ensues between a bear and a morse or a whale; as the latter are more expert in their own element, they generally prove victorious. However, when the bear can find a young whale it repays him for the danger he incurs of meeting with the parent.

[The bear retreats into its winter quarters extremely fat, but as the whole of this time is spent in repose and abstinence he emerges in the spring very lean and emaciated. During this period, the females bring forth and nourish their young, which

De Seve del. Warner sc

The Badger.

are usually two in number; at first round and almost shapeless, but they are not, as has been commonly supposed, licked into shape by the mother.]

CHAP. XVIII.

The Badger.

THE Badger's legs are so short, that its belly seems to touch the ground; this however is but a deceitful appearance, as it is caused by the length of the hair, which is very long all over the body, and makes it seem much more bulky than it really is. It is a solitary stupid animal, that finds refuge remote from man, and digs itself a deep hole, with great assiduity. It seems to avoid the light, and seldom quits its retreat by day, only stealing out at night to find subsistence. It burrows in the ground very easily, its legs being short and strong, and its claws stiff and horny. As it continues to bury itself, it throws the earth behind it, to a great distance, and thus forms to itself a winding hole, at the bottom of which it remains in safety. As the fox is not so expert at digging into the earth, it often takes possession of that which has been quitted by the badger, and some say, forces it from its retreat, by laying its excrements at the mouth of the badger's hole.

This animal, however, is not long in making itself a new habitation, from which it seldom ventures far, as it flies but slowly, and can find safety only in the strength of its retreat. When it is surprised by the dogs at some distance from its hole,

it then combats with desperate resolution; it falls upon its back, defends itself on every side, and seldom dies unrevenged in the midst of its enemies.

The badger, like the fox, is a carnivorous animal, and nothing that has life can come amiss to it. It sleeps the greatest part of its time, and thus, without being a voracious feeder, it still keeps fat, particularly in winter. They always keep their hole very clean, and when the female brings forth, she makes a comfortable warm bed of hay, at the bottom of her hole, for the reception of her young. She brings forth in summer, generally to the number of three or four, which she feeds at first with her milk, and afterwards with such petty prey as she can surprise. She seizes the young rabbits in their warren, robs birds nests, finds out where the wild bees have laid up their honey, and brings all to her expecting brood.

The young ones when taken are easily tamed, but the old still continue savage and incorrigible; the former, after a short time, play with the dogs, follow their master about the house, but seem of all other animals the most fond of the fire. They often approach it so closely, that they burn themselves in a dangerous manner. They are sometimes also subject to the mange, and have a gland under their tail, which scents pretty strongly. The poor of some countries eat their flesh; which, though fat, is at best but rank and ill tasted.

CHAP. XIX.

*The Tapir**.

THERE seems to be a rude, but inferior resemblance between many animals of the old and the world. The congar of America resembles the tiger in natural ferocity, though far inferior in its dimensions. The lama bears some affinity to the camel, but is far behind it in strength and utility. The Tapir may be considered as the hippopotamus of the New Continent, but degraded both as to its size and ferocity.

This animal bears some distant resemblance in its form to a mule. It has a long snout, which it lengthens or contracts at pleasure. Its ears are small, long, and pendent. Its neck and tail are short, and its claws strong and firm, of which it has four upon each foot. Its skin is thick, and covered with brown hair, and the natives make

* [The Tapir has ten front teeth in both jaws: the canine teeth are single in each jaw, and are bent inwards: there are five very broad grinders on each side in both jaws: the feet have three hoofs; but on the fore feet is an additional false or supplementary hoof. Its general attitude, when at rest, is sitting on its rump. It sleeps much by day, and when attacked by dogs makes a vigorous resistance. Its voice is a kind of whistle, so easily imitated, that in this manner it is frequently trepanned. It produces but one young at a birth, of which it is very careful, leading it early in the water, to instruct it in swimming. It is gregarious, feeds by night on vegetables, and does not ruminate as Mr. Bajon affirms. It is a gentle, timid animal, flying at the least noise, and having a very quick ear.]

shields of it, which cannot be pierced by an arrow.

This animal may in some measure be termed amphibious, as it chiefly resides in the water. It differs however from all others of this kind, in feeding entirely upon vegetables, and not making this element the place of its depredations. It feeds upon the pastures by the river side, and as it is very timorous, the instant it hears the least noise, it plunges into the stream. They are greatly sought after by the natives, as their flesh is considered as a delicacy, and thought by some not inferior to beef.

CHAP. XX.

The Racoon.

THE Racoon, which some authors have called the Jamaica rat, is about the size of a small badger; its body is short and bulky; its fur is fine, long, and thick, blackish at the surface, and grey towards the bottom; the nose is rather shorter, and more pointed than that of a fox; the eyes large and yellow, the teeth resembling those of a dog, the tail thick, but tapering towards a point, regularly marked with rings of black, and at least as long as the body; the fore-feet are much shorter than the hinder, both armed with five sharp claws, with which, and his teeth, the animal makes a vigorous resistance. Like the squirrel, it makes use of its paws to hold its food while eating, but it differs from the monkey kind, which use but

one hand on those occasions, whereas the racoon and the squirrel use both, as, wanting the thumb, their paws singly are unfit for grasping or holding; though this animal be short and bulky, it is however very active; its pointed claws enable it to climb trees with great facility; it runs on the trunk with the same swiftness that it moves upon the plain, and sports among the most extreme branches with great agility, security and ease; it moves forward chiefly by bounding, and though it proceeds in an oblique direction, it has speed enough most frequently to escape its pursuers.

This animal is a native of the southern parts of America, nor have any travellers mentioned its being found in the ancient continent. But in the climates of which it is a native, it is found in noxious abundance, particularly in Jamaica, where it keeps in the mountains, and where it often descends to feed upon the plantations of sugar-cane. The planters of these climates consider these animals as one of their greatest miseries; they have contrived various methods of destroying them, yet still they propagate in such numbers, that neither traps nor fire-arms can set them free; so that a swarm of these famished creatures are found to do more injury in a single night, than the labours of a month can repair.

But though, when wild, they are thus troublesome, in a state of tameness no animal is more harmless or amusing; they are capable of being instructed in various little amusing tricks. The racoon is playful and cleanly, and is very easily supported; it eats of every thing that is given it, and if left to itself, no cat can be a better provider; it examines every

corner, eats of all flesh, either boiled or raw, eggs, fruits, or corn, insects themselves cannot escape it, and if left at liberty in a garden, it will feed upon snails, worms, and beetles; but it has a particular fondness for sweets of every kind, and to be possessed of these in its wild state, it incurs every danger. Though it will eat its provisions dry, it will for choice dip them in water if it happens to be in the way; it has one peculiarity which few other animals have been found to possess, it drinks as well by lapping, like the dog, as by sucking like the horse.

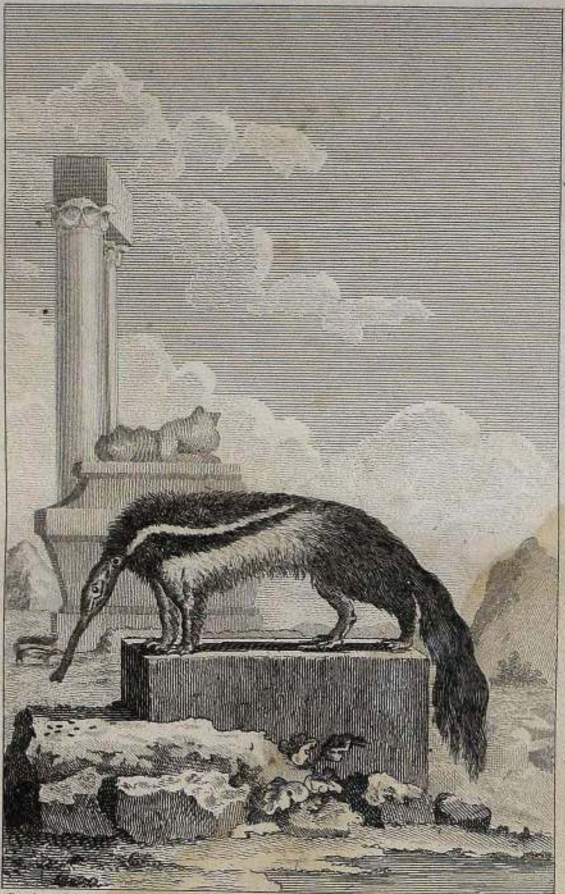
CHAP. XXI.

The Coatimondi.

THE first peculiarity with which this animal strikes the spectator, is the extreme length of its snout, which in some measure resembles that of the hog, but elongated to a surprising degree; it bears some distant resemblance to the animal last described, except that the neck and the body are longer, the fur shorter, and the eyes smaller; but its principal distinction, as was said before, consists in the shape of its nose, the upper jaw being an inch longer than the lower, and the snout, which is moveable, in every division, turning up at the end. Like the racoon, it sits up on the hinder legs with great ease, and in this position, with both paws, carries the food to its mouth.

This animal is very subject to eat its own tail, which is rather longer than its body, but this strange

The Black Coati Mondi.



De Sève del. Warner sc.

The Ant Bear.

De Seve del. Warner sc.

The Tapir

appetite is not peculiar to the coati alone; the mococo, and some of the monkey kinds, do the same, and seem to feel no pain in wounding a part of the body so remote from the centre of circulation.

It seems possest of the same playful qualities, and indiscriminate appetites, with the animal described in the last chapter; if left at liberty in a state of tameness, it will pursue the poultry, and destroy every living thing that it has strength to conquer; though it is playful with its keeper, yet it seems obstinately bent against receiving any instruction, and neither threats nor caresses can induce it to practise any arts to which it is not naturally inclined. When it sleeps, it rolls itself up in a lump, and in that position often continues for fourteen or fifteen hours together.

CHAP. XXII.

Of the Ant-Bear.

THERE are many animals that live upon ants in Africa and America; the pangolin or scaly lizard of Guinea may be considered among this number; but there are a greater variety in America, which makes those minute insects their only subsistence. Though they are of different figures and sizes, yet in general they go under one common name of the Ant Bear; the peculiar length and slenderness of their snout, their singular appetites, and their manner of taking their prey, striking us too strongly to attend to the minute differences of their size or form.

They have been classed by M. Buffon into the larger Tamandua, the smaller Tamandua, and the Ant-eater. The longest of this kind is four feet long, from the tip of the snout to the insertion of the tail; their legs are short, and armed with four strong claws; their tail is long and tufted, and the animal often throws it on its back like the squirrel. The second of this kind is not above eighteen inches long; the tail is without hair, and it sweeps the ground as the animal moves. The ant-eater, which is the third variety, is still smaller than either of the former, as it is not above seven inches from the tip of the snout to the insertion of the tail. The two former are of a brown dusky colour, but this of a beautiful reddish, mixed with yellow; though they differ in figure, they all resemble each other in one peculiarity, which is the extreme slenderness of their snout, and the amazing length of their tongue.

The snout is produced in so disproportionate a manner, that the length of it makes near a fourth part of the whole figure. A horse has one of the longest heads of any animal we know, and yet the ant-bear has one above twice as long in proportion to its body. The snout of this animal is almost round and cylindrical; it is extremely slender, and is scarce thicker near the eyes than at its extremity. The mouth is very small, the nostrils are very close to each other, the eyes are little in proportion to the length of the nose, the neck is short, the tongue is extremely long, slender, and flatted on both sides; this it keeps generally doubled up in the mouth, and is the only instrument by which it finds subsistence; for the whole of this tribe are entirely without teeth, and find safety only in the remoteness and security of their retreat.

De Seve del. Warner sc.

The Ant Bear.

If we examine through the various regions of the earth, we shall find that all the most active, sprightly, and useful quadrupeds have been gathered round man, and either served his pleasures, or still maintained their independence by their vigilance, their cunning, or their industry. It is in the remote solitudes that we are to look for the helpless, the deformed, and the monstrous births of nature. These wretched animals being incapable of defending themselves, either by their agility or their natural arms, fall a prey to every creature that attacks them; they therefore retire for safety into the darkest forests, or the most desert mountains, where none of the bolder or swifter animals chuse to reside.

It may well be supposed that an animal so helpless as the ant-bear is, with legs too short to fit it for flight, and unprovided with teeth to give it a power of resistance, is neither numerous, nor often seen; its retreats are in the most barren and uncultivated parts of South America. It is a native only of the new continent, and entirely unknown to the old. It lives chiefly in the woods, and hides itself under the fallen leaves. It seldom ventures from its retreat; and the industry of an hour supplies it with sufficient food for several days together. Its manner of procuring its prey is one of the most singular in all natural history: as its name implies, it lives entirely upon ants and insects; these, in the countries where it is bred, are found in the greatest abundance, and often build themselves hills five or six feet high, where they live in community. When this animal approaches an ant-hill, it creeps slowly forward on its belly, taking every precaution to keep itself concealed, till it comes within a proper distance of the place

where it intends to make its banquet; there lying closely along at its length, it thrusts forth its round red tongue, which is often two feet long, across the path of these busy insects, and there lets it lie motionless for several minutes together. The ants of that country, some of which are half an inch long, considering it as a piece of flesh accidentally thrown before them, come forth and swarm upon it in great numbers, but wherever they touch they stick; for this instrument is covered with a slimy fluid, which, like bird-lime, entangles every creature that lights upon it. When therefore the ant-bear has found a sufficient number for one morsel, it instantly draws in the tongue, and devours them all in a moment, after which it still continues in its position, practising the same arts until its hunger is entirely appeased; it thence retires to its hiding place once more, where it continues in indolent existence till again excited by the calls of hunger.

Such is the luxurious life of a creature, that seems of all others the most helpless and deformed. It finds safety in its hiding places from its enemies, and an ample supply in some neighbouring ant-hill for all its appetites. As it only tries to avoid its pursuers, it is seldom discovered by them; yet helpless as this animal is, when driven to an extremity, though without teeth, it will fight with its claws, with great obstinacy. With these arms alone it has often been found to oppose the dog, and even the jaguar. It throws itself upon its back, fastens upon its enemy with all its claws, sticks with great strength and perseverance, and even after killing its invader, which is sometimess the case, does not quit its hold, but remains fastened upon him with vindictive desperation.

[Besides the animal here described, are others of the same kind; the most remarkable of which are, the little ant-eater, or Fourmiller, and the prickly ant-eater, of New Holland.

The former is singular for its having only two toes on the fore feet, armed with strong claws; and a tail which it is able to coil round the branches of trees, and hold fast by. The claws on the fore feet are extremely disproportionate; the outer one being very large, and the inner one much smaller. The whole animal is clothed in a beautiful, soft, curled, pale yellow fur. It is a native of Guiana.

The prickly Ant-eater is a short, roundish animal, with a long tubular mouth, and entirely covered over on the upper parts with strong sharp spines, resembling those of the Porcupine. Its tail is very short, and entirely concealed in the spines. The head, legs, and under parts of the body, are thickly covered with a dark-brown harsh hair. On its fore feet are five strong claws, and four on the hinder. In its mode of life it resembles the rest of its tribe, being generally found in the midst of some large ant-hill. When disturbed, it burrows with great strength and dispatch under ground, during which exertion its body is lengthened out in a surprising manner.]

CHAP. XXIII.

*Of the Sloth**.

OF the Sloth there are two different kinds, distinguished from each other by their claws; the one, which in its native country is called the Unan, having only two claws upon the fore feet, and being without a tail; the other which is called the Ai, having a tail, and three claws upon each foot. The unan has the snout longer, the ears more apparent, and the fur very different from the other. It differs also in the number of its ribs, this having forty-six, while the ai has but twenty-eight. These differences, however, though very apparent, have been but little regarded, in the description of two animals which so strongly resemble each other in the general out-lines of their figure, in their appetites, and their helpless formation.

They are both, therefore, described under the common appellation of the sloth, and their habitudes well deserve our wonder and curiosity. Nature seems cramped and constrained in their formation: other animals are often indolent from choice, these are slow from necessity; the ai, from which I shall take my description, and from which the other differs only in the slight particulars above-mentioned, and

* [These animals have no cutting teeth in either jaw: the canine teeth are obtuse, single, longer than the grinders, and placed opposite to each other: in both jaws, on each side, are five obtuse grinders: the fore legs are much longer than the hind, and are armed with very long claws. In the two species here described, it is remarkable, that instead of two distinct excretory apertures, there is one common canal as in birds.]

De Sevè del. Warner sc.

The Sloth.

in being rather more active, is of about the size of a badger. Its fur is coarse and staring, somewhat resembling dried grass; the tail very short, and scarce appearing; the mouth extended from ear to ear; the eye dull and heavy; the feet armed with three claws each, and made so short, and set on so aukwardly, that a few paces is often the journey of a week; but though the feet are short, they are still longer than its legs, and these proceed from the body in such an oblique direction, that the sole of the foot seldom touches the ground. When the animal therefore is compelled to make a step forward, it scrapes on the back of the nails along the surface, and wheeling the limbs circularly about, yet still touching the ground, it at length places its foot in a progressive position; the other three limbs are all brought about with the same difficulty; and thus it is seen to move, not above three feet in an hour. In fact, this poor creature seldom changes place but by constraint, and when impelled by the severest stings of hunger.

The sloth seems to be the meanest and most ill-formed of all those animals that chew the cud; it lives entirely upon vegetable food; on the leaves, the fruit, and the flowers of trees, and often even on the very bark, when nothing else is left on the tree for its subsistence. Like all other ruminant animals, it has four stomachs; and these requiring a large share of provision to supply them, it generally strips a tree of all its verdure in less than a fortnight. Still however it keeps aloft, unwilling to descend, while any thing remains that can serve it for food; it therefore falls to devouring the bark, and thus in a short time kills the tree upon which it found its

support. Thus destitute of provisions above, and crawling slowly from branch to branch, in hopes of finding something still left, it is at last obliged to encounter all the dangers that attend it below. Though it is formed by Nature for climbing a tree with great pain and difficulty, yet it is utterly unable to descend; it therefore is obliged to drop from the branches to the ground, and as it is incapable of exerting itself to break the violence of its descent, it drops like a shapeless, heavy mass, and feels no small shock in the fall. There, after remaining some time torpid, it prepares for a journey to some neighbouring tree; but this, of all migrations, is the most tedious, dangerous, and painful; it often takes a week in crawling to a tree not fifty yards distant; it moves with imperceptible slowness, and often baits by the way. All motions seem to torture it; every step it takes, it sets forth a most plaintive melancholy cry, which from some distant similitude to the human voice, excites a kind of disgust, mixed with pity. This plaintive sound seems its chief defence; few quadrupeds appear willing to interrupt its progress, either that the flesh is offensive, or that they are terrified at its cries. When at length they reach their destined tree, they mount it with much greater ease than when they moved upon the plain. They fall to with famished appetite, and as before, destroy the very source that supplies them.

How far these may be considered as the unfinished productions of Nature, I will not take upon me to determine; if we measure their happiness by our sensations, nothing, it is certain, can be more miserable; but it is probable, considered with regard

to themselves, they may have some stores of comfort unknown to us, which may set them upon a level with some other inferior ranks of the creation; if a part of their life be exposed to pain and labour, it is compensated by a larger portion of plenty, indolence, and safety. In fact they are formed very differently from all other quadrupeds, and it is probable they have different enjoyments. Like birds, they have but one common vent for the purposes of propagation, excrement, and urine. Like the tortoise, which they resemble in the slowness of their motion, they continue to live some time after their nobler parts are wounded, or even taken away. They bear the marks of all those homely-formed animals, that, like rude machines, are not easily discomposed.

* Its note, according to Kircher, is an ascending and descending hexachord, which it utters only by night; its look is so piteous, as to move compassion; it is also accompanied with tears, that dissuade every body from injuring so wretched a being. Its abstinence from food is remarkably powerful; one that had fastened itself by its feet to a pole, and was so suspended across two beams, remained forty days without meat, drink, or sleep; the strength of its feet is so great, that whatsoever it seizes on cannot possibly be freed from its claws. A dog was let loose at the above mentioned animal, taken from the pole; after some time the sloth laid hold of the dog with its feet, and held him four days, till he perished with hunger.

[In addition to the two here mentioned, another, and by far the largest of its kind, has lately been

* Pennant's Synopsis.

introduced to the notice of naturalists from India. This animal approaches in size and shape to that of the common bear, being clothed with a very long black shaggy hair. Its snout is a little elongated, and appears as if cut off at the end. The feet are all armed with five crooked pointed claws; and the tail is short and hardly visible.

In its motions, it was not as in the others, slow and languid; but it appeared moderately lively, and made a kind of short abrupt roar when disturbed or irritated. It fed principally upon vegetables and milk, and was much delighted with honey and sweet things. It was said to burrow, and to have been dug out of its subterraneous retreat, when first discovered.]

CHAP. XXIV.

*The Jerboa**.

THIS animal as little resembles a quadruped, as that which has been described in a former chapter. If we should suppose a bird, divested of its feathers, and walking upon its legs, it might give us

* [These curious animals have two front teeth in each jaw; the fore legs are very short, and the hind legs very long, they have perfect collar bones. M. Sonnini, while he was in Egypt, fed for some time six of these animals in a large cage of iron wire. The very first night, they entirely gnawed asunder the upright and cross sticks of their prison; and he was under the necessity of having the inside of the cage lined with tin. They were fond of basking in the sun, and as soon as they were placed in the shade, they clung close to each other, and seemed to suffer from the privation of warmth. They did not usually sleep during the day.

the idea of its figure. It has four feet indeed, but in running or resting, it never makes use of any but the hinder. The number of legs, however, do not much contribute to any animal's speed; and the jerboa, though, properly speaking, furnished but with two, is one of the swiftest creatures in the world.

The jerboa is not above the size of a large rat, and its head is sloped somewhat in the manner of a rabbit, the teeth also are formed like those of the rat kind, there being two cutting teeth in each jaw; it has a very long tail tufted at the end; the head, the back, and sides are covered with large ash-coloured soft hair; the breast and belly is whitish, but what most deserves our attention in the formation of this little animal, is the legs; the fore legs are not an inch long, with four claws and a thumb upon each, while the hinder-legs are two inches and a quarter, and exactly resemble those of a bird, there being but three toes, the middlemost of which is longest.

The jerboa is found in Egypt, Barbary, Pales-

Though they had much agility in their movements, gentleness and tranquillity seemed to form their character. They suffered themselves to be stroked with great composure, and never made a noise or quarrelled among themselves, even when food was scattered among them. No distinguishing symptoms of joy, fear, or gratitude were discoverable; and even their gentleness was by no means either amiable or interesting: it appeared the effect of a cold and complete indifference, approaching to stupidity. Three of these died before he left Alexandria; two died on a rough passage to the isle of Rhodes; and the last was lost, and as he supposes, devoured by cats while he was on the island.

He observes that they do not ruminate, and that it is difficult to transport them, on account of the quickness and facility with which they gnaw through the thickest and strongest boards.]

tine, and the deserts between Bussorah and Aleppo; its hind-legs, as was said before, are only used in running, while the fore-paws, like those of a squirrel, grasp its food, and in some measure perform the office of hands. It is often seen by travellers as they pass along the deserts, crossing their way, and jumping six or eight feet at every bound, and going so swiftly, that scarcely any other quadruped is able to overtake them. They are a lively, harmless race of animals, living entirely upon vegetables, and burrowing like rabbits in the ground. Mr. Pennant tells us of two that were lately brought to London, that burrowed almost through the brick wall of the room where they were kept; they came out of their hole at night for food, and when caught were much fatter and sleeker than when confined to their burrows. A variety of this animal is found also in Siberia and Circassia, and is, most probably, common enough over all Asia. They are more expert diggers than even the rabbit itself; and when pursued for a long time, if they cannot escape by their swiftness, they try to make a hole instantly in the ground, in which they often bury themselves deep enough to find security before their pursuers come up. Their burrows, in some places, are so thick as to be dangerous to travellers, the horses perpetually falling in them. It is a provident little animal, and lays up for the winter. It cuts grass in heaps of a foot square, which, when dried, it carries into its burrow, therewith to serve it for food, or to keep its young warm during the rigours of the winter.

With this animal, I shall conclude the history of quadrupeds, which of all parts of natural know-

ledge seems to have been described the most accurately. As these, from their figure, as well as their sagacity, bear the nearest resemblance to man, and from their uses or enmities are the most respectable parts of the inferior creation; so it was his interest, and his pleasure, to make himself acquainted with their history. It is probable, therefore, that time, which enlarges the sphere of our knowledge in other parts of learning, can add but very little to this. The addition of a new quadruped to the catalogue already known, is of no small consequence, and happens but seldom; for the number of all is so few, that wherever a new one is found, it becomes an object worthy our best attention. It may take refuge in its native deserts from our pursuits; but not from our curiosity.

But it is very different with the inferior ranks of the creation; the classes of birds, of fishes, and of insects, are all much more numerous, and more incompletely known. The quadruped is possessed of no arts of escaping which we are not able to overcome; but the bird removes itself by its swiftness, the fishes find protection in their native element, and insects are secured in their minuteness, numbers, and variety. Of all these, therefore, we have but a very inadequate catalogue, and though the list be already very large, yet every hour is adding to its extent.

In fact, all knowledge is pleasant only as the object of it contributes to render man happy; and the services of quadrupeds being so very necessary to him in every situation, he is particularly interested in their history: without their aid, what a wretched and forlorn creature would he have been! the

principal part of his food, his clothing, and his amusements, are derived wholly from them, and he may be considered as a great lord, sometimes cherishing his humble dependants, and sometimes terrifying the refractory, to contribute to his delight and conveniencies.

The horse and the ass, the elephant, the camel, the lama, and the rein-deer, contribute to ease his fatigues, and to give him that swiftness which he wants from nature. By their assistance, he changes place without labour; he attains health without weariness; his pride is enlarged by the elegance of equipage; and other animals are pursued with a certainty of success. It were happy indeed for man, if while converting these quadrupeds to his own benefit, he had not turned them to the destruction of his fellow-creatures; he has employed some of them for the purposes of war, and they have conformed to his noxious ambition with but too fatal an obedience.

The cow, the sheep, the deer, and all their varieties, are necessary to him, though in a different manner. Their flesh makes the principal luxuries of his table, and their wool or skins the chief ornament of his person. Even those nations that are forbid to touch any thing that has life, cannot wholly dispense with their assistance. The milk of these animals make a principal part of the food of every country, and often repairs those constitutions that have been broken by disease or intemperance.

The dog, the cat, and the ferret may be considered as having deserted from their fellow-quadrupeds, to list themselves under the conduct and protection

of man. At his command they exert all their services against such animals as they are capable of destroying, and follow them into places where he himself wants abilities to pursue.

As there is thus a numerous tribe, that he has taken into protection, and that supplies his necessities and amusements, so there is also a still more numerous one, that wages an unequal combat against him and thus calls forth his courage and his industry. Were it not for the lion, the tiger, the panther, the rhinoceros, and the bear, he would scarcely know his own powers, and the superiority of human art over brutal fierceness. These serve to excite, and put his nobler passions into motion. He attacks them in their retreat, faces them with resolution, and seldom fails of coming off with a victory. He thus becomes hardier and better in the struggle, and learns to know and to value his own superiority.

As the last mentioned animals are called forth by his boldest efforts, so the numerous tribe of the smaller vermin kind excite his continual vigilance and caution; his various arts and powers have been no where more manifest, than in the extirpation of those that multiply with such prodigious fecundity. Neither their agility nor their minuteness can secure them from his pursuits; and though they may infest, they are seldom found materially to injure him.

In this manner we see, that not only human want is supplied, but that human wit is sharpened, by the humbler partners of man in the creation. By this we see, that not only their benefits, but their depredations are useful, and that it has wisely

pleased Providence to place us like victors in a subdued country, where we have all the benefit of conquest, without being so secure, as to run into the sloth and excesses of a certain and undisturbed possession. It appears, therefore, that those writers who are continually finding immediate benefit in every production, see but half way into the general system of nature. Experience must every hour inform us, that all animals are not formed for our use; but we may be equally well assured, that those conveniencies which we want from their friendship, are well repaid by that vigilance which we procure from their enmity.

END OF THE THIRD VOLUME.

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